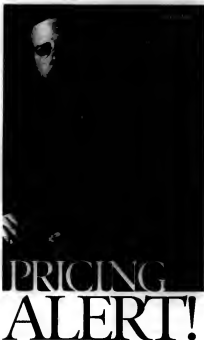


COMPUTERWORLD

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**PRICING
ALERT!**

Vendors of client/server software are dreaming up new pricing schemes to extract long-term subscription fees from existing customers. This isn't good news for IT managers trying to keep a lid on costs, but we've got advice on how to fight back.

Story by Jaikumar Vijayan begins on page 20.

USERS WIN FLEXIBILITY FROM MICROSOFT

But configuration options don't slim down operating system, stem antitrust concerns

BY PATRICK THIBODEAU
AND CRAIG STEDMAN

Microsoft Corp.'s decision last week to give PC makers more leeway in installing applications on its forthcoming Windows XP operating system may give corporate end users some flexibility in configuring systems. But it isn't doing much to quell antitrust suspects about the vendor's plans to weld more applications to its operating system, say end users and analysts.

The announcement heralds a mixed bag of changes. Although Microsoft is giving PC makers the ability to offer rival products such as instant messaging and media players

on the XP desktop, the Microsoft applications that perform similar functions remain on the system. A leaner operating system, which some end users say is desirable, doesn't necessarily result.

And while Microsoft decided to let PC makers include an Internet Explorer Add/Remove function for Windows

98, 2000, Me and XP, that feature doesn't actually remove the browser from the operating system; it just deletes icons and other access points. Internet Explorer technology remains after the Remove function is run. So the browser may still launch when, for instance, the Windows Up-

date feature in the Start menu is used if the alternate browser doesn't support that function, said a Microsoft spokesman.

Complete removal of Internet Explorer would have been the best option for Brad Fox, IS manager at Bertsch Cabinet Manufacturing Inc. in Waterloo, Iowa. "Some of the Internet Explorer registry keys wreak havoc with some of our custom

Microsoft, page 65

CA REALIGNS ITS PRODUCT LINEUP

But even the CEO says there's more work to do

BY MARG L. ROSSINI
ORLANDO

Customers of Computer Associates say the company is making strides in improving its services and articulating its product messages more clearly, but they add that it still has a long way to go.

At last week's CA World conference here, executives of the Islandia, N.Y.-based software vendor outlined a new product lineup structure, as well as Unicenter 3.0, the latest version of its flagship management software, and new storage and security products.

President and CEO Sanjay Kumar explained that Computer Associates International Inc.'s six new core areas, which were first outlined last month, will fall within one of four product lines. Enterprise management will come under the Unicenter line, storage will be part of the newly chartered

CA Lineup, page 16

SERVERS GET USAGE-BASED PRICING

HP plan benefits those with capacity spikes

BY JAIKUMAR VIJAYAN

Hewlett-Packard Co.'s new Pay per Use pricing option for its RISC-based Superdome and Intel-based Netserver families of servers is a good first attempt at true usage-based pricing in the distributed server market.

But the option as announced by HP last week definitely isn't for everyone, cautioned users and analysts. In fact, apart from a narrow set of users who have widely fluctuating workloads, the option could end up costing more than outright

purchase or traditional leases in many cases, they added.

"This is an example of HP thinking out of the box and delivering something that is truly unique," said Tim Daley, a director at beta-tester TRW Inc.'s application services provider group in Washington, Mich.

IBM offers a similar pricing plan, called workload licensing, in the mainframe space. A range of vendors, including Sun Microsystems Inc., Unisys Corp. and HP itself, also offer capacity upgrade-on-demand options under which users install more processors than they need upfront but pay for them only as they are turned on. But

Server Pricing, page 65





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INTERPLANETARY INTERNET

In this week's Future Watch, learn about Internet technology designed for astronomical distances that could also help terrestrial users. **PAGE 30**



REBUILDING FROM THE GROUND UP

Security manager Mathias Thurman finds himself building the basic security infrastructure for his new employer. **PAGE 48**

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8 Financial services companies like Schwab are installing natural-language search engines to help users navigate their sites.

10 Microsoft Great Plains leaps into the midrange procurement software market, a move facilitated by a partnership with Clarus.

10 Wireless alerts of impending power blackouts are now available in California.

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ONLINE

THE ABCs OF CRM

Christine Bauer of Mindful Technologies in Newton, Mass., presents a simple checklist that may help with your CRM implementation. www.computerworld.com/e-commerce

ROI ONLINE

Head to Computerworld ROI's Web site for online-only features, including "Walking the Walls No More," detailing how Intel condensed the IT metrics that it tracks to a single sheet of paper. www.computerworld.com/roi

THE PENGUIN STRIKES BACK

Computerworld Community member and Linux user Thomas Corbier takes issue with a recent Bill Laberis column, contending that "Linux is full of fanatics" as well as potential. www.computerworld.com/community/ta

SYNCHRONIZATION AS A WIRELESS STOPGAP?

Kevin Yen, president of Live Sky Solutions in Boston, outlines the case for synchronization as a practical short-term solution to overcoming the need to develop vast wireless networks. www.computerworld.com/wireless

AT DEADLINE

Microsoft: Revenue Up, Investments Down

Microsoft Corp. said last week that its fourth-quarter revenue will likely come in slightly higher than expected at \$6.5 billion to \$6.8 billion. Microsoft, which did \$5.8 billion worth of business in last year's fourth quarter, said operating earnings for the just-finished period should be in line with its earlier projections. But the company in taking a \$3.9 billion charge from the declining value of stock that it holds in other firms, especially in the cable TV and telecommunications industries, officials said. The last value isn't seen as temporary, as Microsoft was forced to take a charge against investment income, officials said. The company will report its final numbers July 19.

HomeRuns.com Strikes Out

The online grocery business lost a second vendor within a week Thursday when HomeRuns.com, which has been in business since 1998, closed its doors. The shutdown followed the closure of Web.com Group Inc.'s operations. Officials at Burlington, Mass.-based HomeRuns.com stated their inability to secure additional capital. The July 9 closing of Foster City, Calif.-based Web.com was also blamed on continuing losses and lack of new investment funds.

Correction

Due to a reporting error, a story in *Computers* ("Vendors Offer HIPAA Testing, Certification," News, July 2) incorrectly stated how Salt Lake City-based Carenet Corp.'s Health Insurance Portability and Accountability Act (HIPAA) certification service works. The service analyzes electronic data interchange (EDI) transaction files for compliance with HIPAA EDI requirements and generates a report that identifies errors in those files.

Flaws in Wireless Security Detailed

Cracked algorithm, holes in 802.11 spec mean companies need more authentication

BY DAN VERTON
LAS VEGAS

A CRYPTOLOGIST who discovered several gaping holes in the international standard governing the design of wireless network devices and the encryption algorithm meant to protect those networks last week detailed vulnerabilities that could be leaving corporate systems open to hackers.

Ian Goldberg, a cryptologist at Montreal-based security and privacy software developer Zero-Knowledge Systems Inc., along with researchers at the University of California, Berkeley, uncovered flaws in the IEEE 802.11 standard. Goldberg published a paper (www.isaac.cs.berkeley.edu/isaac/wep-faq.html) on the findings earlier this year and made one of his first public appearances about it at the annual Black Hat hacker conference here.

Hardware and software vendors use 802.11 to develop wireless Ethernet cards. The Wired Equivalent Privacy (WEP) algorithm is designed to provide the same level of security for wireless devices that a physical network cable can.

"We have demonstrated attacks on WEP that defeat each of the security goals" it was designed to address, including data confidentiality, network access control and data integrity, said Goldberg, who showed slides demonstrating the mathematical proof that such exploits are possible to an applauding crowd of hackers and security professionals.

"We can read WEP-protected traffic, we can inject traffic onto WEP-protected networks. We can modify WEP-

protected data," he said.

Goldberg and other security experts recommended that to counter the threat, all companies should use additional authentication systems, such as virtual private networks or IPsec. Before allowing data to cross from a wireless network to an intranet or other corporate system, he said some products will be coming out soon to address these vulnerabilities, but they will be proprietary.

Drive-by Hacking

Hackers can often park their cars in a company's parking lot and simply "become a node" on the firm's wireless network — known as authentication spoofing, said Goldberg. "Unlike physical cables, it's really difficult to control how far radio waves go," he said.

Hackers can travel the entire length of Market Street in San Francisco "and basically not lose 802.11 coverage" while picking up wireless LAN signals in their cars, he said.

Mandy Andress, president of Dublin, Calif.-based ArcSec

Technologies Inc., said WEP is particularly vulnerable to hackers in cars. She said there have been cases where hackers have used parabolic dishes to pick up wireless network signals from as far as eight miles away.

One of the most significant problems found in the WEP algorithm includes weaknesses in the way WEP encrypts packets of data using a stream cipher.

Through a series of computations, hackers can eventually uncover the plain text of certain encrypted messages and use those packets to intercept and decrypt messages encrypted with the same key, which is known as an Initialization Vector packet collision.

In addition, many commercial wireless Ethernet cards are vulnerable to bugs stemming from use by all mobile network clients of the same encryption key, said Goldberg.

"Attackers just need to know a single plain-text packet and its corresponding encrypted packet," which can be attained by plugging a company's network or sending spam traffic, Goldberg explained. "It's a correct encryption of the message, so the receiver has no reason to reject it."

That could allow hackers to

do things like inject packets of data into financial transactions that contain charged dollar amounts, Goldberg said.

"WEP is assumed to be cracked now," said Chris Rouland, director of the X-Force vulnerability research unit at Internet Security Systems Inc. in Atlanta. "If you watch enough good traffic on a WEP network, you can crack everything in about 12 hours."

Newton, Mass.-based consultancy Cahners In-Stat Group has forecast that the wireless LAN market will reach \$2.2 billion by 2004.

MORE ONLINE

For issues and complete security news, visit our Security Community at www.computerworld.com/security

Bug Hunter Finds Quarry In Outlook

BY JASHEER VILKAT

Microsoft Corp. was working on a patch Friday for a vulnerability in an ActiveX control in its Outlook e-mail software that could let an attacker run malicious code on a victim's computer via either a Web page or HTML e-mail.

The defect lies in the Microsoft Outlook View Control, which allows Outlook mail folders to be viewed via Web pages, according to Microsoft.

The company alerted technical account managers in its worldwide support network to encourage users to apply administrative measures outlined in an updated advisory that the company had just released (www.microsoft.com/technet/treeview/default.asp?url=/technet/security/bulletin/MS01-038.asp).

The bug came to light last Monday when a Bulgarian "bug hunter" notified the software vendor.

Normally, the control should allow users to only passively view mail or calendar data. But

Wireless Standards

NAME	WHEN PUBLISHED	RANGE DETAILS
		Operates in a 2.4-GHz range, same as cordless phones
		Also in 2.4-GHz range; it's the standard used by most corporate wireless LANs today
		Operates in a 5-GHz range; offers less distance capability between base station and client
		Will provide enhanced security features such as larger encryption keys and 128-bit encryption

Commerce One Enables Cross-Industry Purchase Orders for Seven Exchanges

Various marketplaces join forces to avoid having to build multiple connections

BY MICHAEL MEEHAN

Last year, it was marketplace mania as seemingly every company on earth announced it would launch an online trading exchange.

Now the marketplaces that remain afloat are banding together and forming flotillas to concentrate their strength.

Last week, Commerce One

Inc. in Pleasanton, Calif., announced that it has successfully linked seven marketplaces ranging from national telecommunications exchanges to the energy industry to an aerospace consortium, pushing through 40,000 separate market-to-market purchase orders to date.

The goal of such initiatives is to create an online mall where one company can shop in many exchanges without having to build multiple connections.

"We're never going to have a single marketplace that can encompass everything, so this is something they have to do,"

said Karen Peterson, an analyst at Gartner Inc. in Stamford, Conn. "I think we're going to see a lot more of this in the coming months."

Case in Point

In May, chemical exchange Elexica Inc. absorbed Horsesham, Pa.-based rubber industry marketplace Elastomerconnections.com as a method of expanding its scope. The pair is still building exchange links.

And further linkage may be in store. James Kendrick, an independent chemicals and plastics industry analyst, noted that eight of the 13 investors in Philadelphia-based Elexica are also investors in Zurich-based plastics exchange Onenexus Corp.

"The challenge is to survive

during the adoption phase, and it can't hurt to broaden your scope," he said.

The early marketplace-to-marketplace links are likely to enable procurement but not the mass moving of goods through the supply chain, said Commerce One engineer Bob Glushko.

"We're still looking to create standardized purchase orders industry to industry," Glushko said. "The connectivity issue is really dominated by the comprehension issue."

The Commerce One-linked marketplaces will allow for a certain amount of regional trading. T-Mari, an exchange that serves various industries, will allow The Boeing Co. in Seattle, which trades through the Exostar LLC marketplace in Herndon, Va., to buy goods and services in Germany.

"This gives them another value proposition to their customers, and, hopefully, that value will grow over time," Peterson said. ■



the vulnerability could expose a function that allows Web pages to actively manipulate Outlook data, thus enabling attackers to delete mail, change calendar information or run destructive code on a victim's computer via Outlook, the advisory said.

Users can expose themselves to the vulnerability by simply visiting a malicious Web page or opening malicious HTML e-mail, said Scott Culp, a program manager on Microsoft's security team.

"It is not needed for users to open or click on attachments" for the control to be invoked, said Georgi Guninski, the bug hunter. Users can trigger the malicious code simply by visiting a Web page or by previewing Outlook e-mail messages, he said in an e-mail to Computerworld.

"It is extremely easy to find the vulnerability... I found it very quickly after I installed Office XP," Guninski said. "And if Outlook 98 is affected, as Microsoft states in their advisory, this means it has been around for years."

The Active X control was shipped with Outlook 98, 2000 and 2002. Guninski has discovered dozens of similar bugs in Microsoft products.

Culp said Microsoft is working on a patch but didn't say when it would be available. ■

Oracle Moves to Bring its Apps to Drivers

Voice-enabled access would make usage hands-free

BY LEE COPPELAND

Believing that the market is ripe for accessing database applications from the road, Oracle Corp. last week announced that it's launching a broad joint-development initiative with automotive start-up Wingcast Inc. to bring its applications to vehicles.

"We expect every one of our applications to be wireless-enabled and voice-enabled," said Larry Ellison, Oracle's chairman and CEO. Ellison said the company hopes to give customers hands-free access to its full suite of applications from the driver's seat.

The Wingcast service would also provide voice-activated cellular calling and access to the Web, e-mail, news, navigation and traffic updates, as

well as Oracle applications.

For example, a sales representative would have voice-activated access to Oracle's customer relationship management (CRM) applications and obtain sales leads from their vehicles, Ellison said.

The service is slated for availability in vehicles from Ford Motor Co. by fall 2002. Pricing hasn't yet been determined.

In a bid to keep pace with rival General Motors Corp.'s OnStar service, Ford and San Diego-based Qualcomm Inc. launched

Wingcast last July. The company was to develop in-vehicle communications services, known as telematics, for 1 mil-

lion Ford vehicles by fall 2002. But Ford postponed the launch date in March, saying that the Wingcast service wouldn't be available until its 2003 model year vehicles start shipping.

In contrast, GM launched its telematic service as an option on Cadillac five years ago. OnStar now boasts more than 13 million subscribers and is available as a factory-installed option on 36 of GM's 54 2002 models.

GM also has deals to equip Acura, Lexus, Audi and Subaru vehicles with the OnStar service.

Wingcast CEO Harel Koshen, a former vice president of wireless technology at Microsoft Corp., said the two

companies are setting up the joint development center near Wingcast's headquarters in San Diego. Wingcast already uses Oracle's database, enterprise resource planning (ERP) and wireless applications.

But Thilo Koslowski, an analyst at Gartner Inc. in Stamford, Conn., said consumers aren't ready for advanced telematic applications such as voice-activated access to CRM and ERP systems.

"Everyone has seen the OnStar Batman commercial, but not everyone wants the Batmobile," he said. "Oracle is pushing all kinds of applications into the car without thinking about the value to the consumer."

According to a Gartner survey of 10,000 U.S. households in April, approximately 50% were aware of in-vehicle communications services, such as GM's OnStar. Of that number, only 25% expressed interest in basic navigation and traffic services, and less than 10% were interested in e-mail or Web access in their vehicles. ■

JUST THE FACTS Wingcast Venture

Oracle and Wingcast launched a joint development effort last week that includes the following priorities:

■ Hiring staff for the San Diego-based joint development group

■ Building infrastructure to voice- and wireless-enabled Oracle applications

■ Developing strategy and a business model to offer more services to drivers

Senators Debate Issues Surrounding Privacy

Opt-in vs. opt-out weighed at hearing

BY PATRICK THREDADE
WASHINGTON

A BIPARTISAN group of U.S. senators is pushing for an on-line privacy law, but the lawmakers sharply disagree on many key issues that could have a major impact on companies, including whether businesses should be required to seek consent, or "opt-in," from users before collecting and sharing personal information.

The Senate Commerce, Science and Transportation Committee, which is widely viewed as ground zero of the privacy debate in Congress because of the concentration of influential legislators, is expected to consider three online privacy bills that committee Chairman Ernest Hollings (D-S.C.) hopes to weld into a consensus bill for full Senate consideration.

But Hollings' approach differs from that of former chairman John McCain (R-Ariz.). McCain backs "opt-out" methods, which would allow personal information to be used unless otherwise indicated.

Network technology "makes it much easier for business to track and trade information about consumers' transactions, whereabouts and preferences," said McCain at a committee hearing last week. "For all the benefits customers derive from customized services, surveys continue to show that Americans are concerned, and should be concerned, about their on-line privacy. I remain convinced that a federal law is needed."

McCain and Sen. John Kerry (D-Mass.) co-sponsored a privacy bill last year and plan to introduce a revised bill in this session.

Privacy advocates generally favor opt-in, where people give

affirmative consent to a firm that wants to collect and share personal information. Business groups say that if consumers are asked to opt-in, many won't, hurting the ability of companies to offer customized services.

If Congress puts requirements on online businesses, those rules should also apply to off-line businesses, argued Paul Misener, vice president of public policy at Amazon.com, Inc. in Seattle. "It makes little sense to treat information collected online differently from the same — and often far more

sensitive — information collected through other media, such as off-line credit card transactions [and] mail-in warranty registration cards," he said at last week's hearing.

Another issue for the committee to resolve is federal preemption of state laws. States are free to adopt tougher privacy laws unless Congress specifically prevents them.

Sen. Ron Wyden (D-Ore.), who co-sponsored a privacy bill with Sen. Conrad Burns (R-Mont.), said that federal preemption is the key issue in privacy legislation, and that if businesses want it, they're going to have to be willing to back a federal law. ■

Schwab Taps Natural-Language Search Engine

Spends nine months developing IPHrase technology on site

BY LUCAS NEARIN

Like many other financial services firms of late, San Francisco-based Charles Schwab & Co. was getting a clear message from the users of its Web site, Schwab.com.

"We have a good site, but [users said] it's hard to traverse," said Debbie Naganuma, director of electronic brokerage product development at Schwab.com.

Last month, Schwab completed a nine-month installation of a natural-language search technology on its Web site to help alleviate that problem. Schwab said the technology allows its 75 million end users to type simple or complex questions and receive answers from anywhere on the site in one step, bypassing the need for other, more complex navigation tools.

In response both to Web sites that contain tens of thousands of Web pages and to a burgeoning number of mainstream consumers looking for financial advice on the Web, natural-language search engines are expected to be deployed at an increasing rate, analysts say.

"When [we] started out looking at [search] vendors two years ago, one driving thing was that it had to be a natural search engine, because

Top Privacy Players, Issues

THE PLAYERS

Senators: Ernest Hollings (D-S.C.), chairman of the Commerce, Science and Transportation Committee, intends to reintroduce an online privacy bill. John McCain (R-Ariz.) and John Kerry (D-Mass.) are also working on a bill. Ron Wyden (D-Ore.) is co-sponsoring a bill with Conrad Burns (R-Mont.).

THE ISSUES

Opt-in vs. opt-out standards: This is the top issue. A consensus bill may require both approaches, depending on the type of personal information or data-sharing involved.

The ability to sue, or "private right of action": An IT measure that leads to the release of customer data, inadvertently or otherwise, could make a company liable for damages of up to \$1,000 for each violation if Congress includes that right in privacy legislation. Imagine if 10,000 customer addresses find their way onto the Internet. No bonus this year.

Data access: Companies may be required to allow customers to see data collected about them. This could be a major challenge for companies that don't have an integrated view of customer records.

Online vs. off-line rules: A privacy rule that extends to off-line data collection means that any corporate database is potentially subject to these privacy rules.

Federal preemption of state laws: States are free to adopt tougher privacy rules unless Congress preempts them. The grouped of complying with different state rules wastes many industry groups.

entire software suite.

Schwab.com receives 20,000 to 25,000 hits per week.

"We've yet to see anything that compares to the research capabilities [of One Step]," Naganuma said.

The installation of One Step included about three months spent on peer evaluation within the company, allowing employees to test the technology before subjecting the public to it. That and the rest of the installation went smoothly.

"Based on my other experience with integrating any third-party software or platform, it was relatively easy," Naganuma said. "Where we do run into additional work is that parts of Schwab.com are still very unstructured."

"It's important to have someone with authority enough to ensure the design is proper and who can handle the internal business departments jockeying for position on the Web site," said analyst Ian Rubin at IDC. "And someone who can facilitate things being updated and managed properly."

Without those efforts, no search tool alone is going to satisfy customers. ■

[we] wanted to make the user's experience more comfortable," Naganuma said.

Schwab.com chose One Step, an application created by startup vendor IPHrase Technologies Inc. in Cambridge, Mass. Sue Feldman, an analyst at IDC in Framingham, Mass., said One Step is quickly grabbing attention in the marketplace.

"The feature I'm struck with most is the way they present results. It's easy to understand what has been found," Feldman said of One Step, which tabulates aggregated information from multiple data sources into a chart.

The search engine, which can take into account spelling mistakes, uses an algorithm based on "natural" conversational phrases, as opposed to searches based on keywords.

For example, a customer could type in, "What are the earnings estimates for GE?" and get the results in seconds.

Prices for One Step run from \$250,000 for an annual subscription to \$700,000 for the



Natural-language search technology from IPHrase Technologies will let Schwab.com users get complex questions answered in one step.

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BRIEFS

HealthNow Expands Online Services

HealthNow New York Inc. has selected an Internet platform from The TriZetto Group Inc. in Newport Beach, Calif., to expand its online services to members, providers and employers. HealthNow, a \$1.25 billion company, is a Blue Cross/Blue Shield of New York Group that insures 750,000 New York residents. The company plans to conduct Web-based transactions such as inquiries about eligibility and identification card requests.

Employee E-Mail Monitoring Escalates

According to a study released last week by the Privacy Foundation in Denver, 14 million employees, or just more than one-third of the internet-connected workforce in the U.S., have their Internet or e-mail use monitored by their employers. Worldwide, the number of employees under such surveillance is about 27 million, the study reports. Inexpensive technology is driving the growth of employee monitoring, according to Andrew Schuchman, the Privacy Foundation's chief researcher. Worldwide sales of employee-monitoring software are estimated at \$140 million per year, or about \$5.25 per monitored employee per year, the foundation said.

NuGenesis Alleges Patent Infringement

NuGenesis Technologies Corp. in Waltham, Mass., last week said it has filed a patent infringement lawsuit in U.S. District Court for the District of Massachusetts against Scientific Software Inc. in Pleasanton, Calif. The suit is seeking damages and an injunction to prevent Scientific Software from continuing to infringe on its patent covering the ability of NuGenesis SOARS to store and access visual information generated from a Laboratory Control and Analysis program in connection with a print operation.

Microsoft, Clarus Marry Apps for Procurement Suite

Companies look to push installed, rather than hosted, online procurement software

TIMOTHY MEEHAN MONTHS AFTER entering the midmarket supply chain business, Microsoft Corp. has expanded its procurement.

Last week, Microsoft Great Plains Business Solutions in Fargo, N.D., announced that it would integrate its back-office business applications with procurement software from Clarus Corp. in Suwanee, Ga. Microsoft finalized its purchase of Great Plains in April, and this is its first major announcement in the supply chain, back-office accounting software field.

"This is really the first serious effort to reach the midmarket with an internal procurement application instead of a hosted one," said Shawn Willett, an analyst at Current Analysis Inc. in Sterling, Va.

He said the move with hosted purchasing applications is that IT departments still need to build links into back-office applications, which adds complexity and cost to the equation.

Clarus has been in competition with companies such as Sunnyside, Calif.-based Arbis Inc. and Pleasanton, Calif.-based Commerce One Inc. in selling half-million-dollar procurement applications to large enterprises.

Many of those companies sought to force supply chain partnerships similar to the one between Great Plains and Clarus, but most have fallen through during the past year.

"Commerce One and SAP are about the only partnership left standing, and that goes beyond procurement into marketplaces," said Karen Peterson, an analyst at Stamford,

Conn.-based Gartner Inc.

Oracle Corp., SAP AG and i2 Technologies Inc. have also built procurement tools on top of their enterprise resource planning software, though analysts criticized those companies for a lack of functionality in their initial online procurement offerings.

Carmax Foris, e-commerce product manager at Great Plains, noted that her company would have faced a similar learning curve if it had attempted to develop a procurement product without Clarus.

With Clarus on board, the new product will be ready to ship in the last quarter. Foris said the first version will pro-

vide a simple data normalization link between Clarus' procurement engine and Great Plains' back-office accounting functions.

A full integration is expected by the middle of next year, possibly leveraging some of Microsoft's new .Net technology to connect the systems.

"We envision triggered purchases through supply chain applications," Foris said. "Your supply chain software would notice your inventory is low and then tell your back-office software to contact your procurement software to make the purchase."

Peterson said that while she isn't sure how long the partnership will last, she believes that it presents a great opportunity for Microsoft to field-test many of its new .Net business process applications. ▀

Midmarket Procurement

Microsoft Great Plains and Clarus have teamed up to provide a unified supply chain/procurement system for midmarket companies. Such offerings had previously been targeted solely at large enterprises.

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- Real-time purchase orders and order processing

Wireless Alerts Join Calif. Blackout Arsenal

Firms might add backup warnings

BY MATT HAMBLEN

Residents and businesses in California can now get wireless alerts of impending power blackouts to help provide system protections.

State officials last week introduced notification features at the My California Internet portal (<http://my.ca.gov>). Users can set up profiles to get alerts of pending rolling blackouts and other types of state information—even lottery scores, according to officials.

The wireless power warnings could tell subscribers when to turn down air conditioners, appliances and lights, said Arun Baheti, California's director of e-government. The last rolling blackouts in the

state were in April. So far, the weather has been mild this summer and demand is low, but officials said that could change at any time.

Deloitte Consulting in New York is the integrator for the portal, which is based on technology from BroadVision Inc. in Redwood City, Calif. The Web site provides alerts to any wireless device, including cell phones and handhelds, using e-mail and Short Message Service.

State officials couldn't identify any businesses that are using the alerts, but some companies expressed interest.

"We might use wireless alerts in the future, but we don't have any wireless devices and would need to purchase those," said Mel Reeves, CIO at ARB Inc. in Lake Forest, Calif. A construction company, ARB is building several power plants and has

been affected by four rolling blackouts at a site in Pittsburg, Calif., each lasting an hour.

Wireless notification at that site could be helpful, since battery backup lasts only 30 minutes, said Reeves. That forces workers to download server data to hard drives, he said.

John Burke, systems and operations manager at Pacific Coast Building Products Inc. in Sacramento, Calif., said he constantly checks electricity demand via his desktop computer at the California Independent Service Operator Web site (www.caiso.com).

"It's worked out so far, but a wireless alert wouldn't hurt," Burke said. Mainly, he said, the company is relying on a diesel generator installed during the Y2K crisis to provide data center backup. The generator provides power for eight hours on a single tank of fuel. ▀

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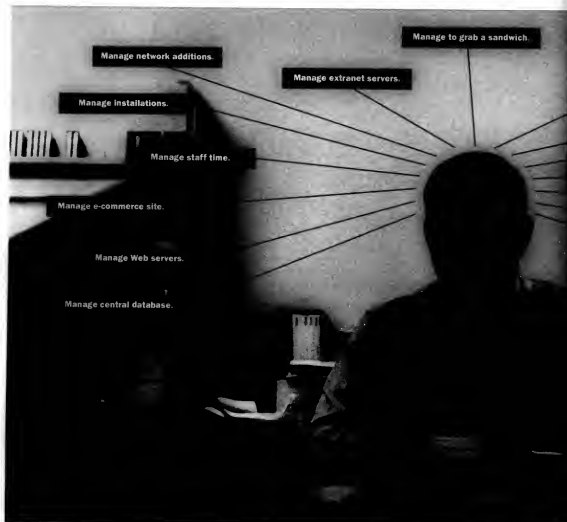
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Microsoft

BRIEFS

VerSign Helping to Boost .Net Security

Microsoft Corp. will use digital certificates authentication and security technologies developed by VerSign Inc. to provide lighter data security capabilities for its .Net Internet-based computing services initiative. In exchange, Mountain View, Calif.-based VerSign will incorporate .Net technology standards into its Internet-based trust services and will deploy Windows 2000 Server on the systems used for Web site hosting, domain name registration and Web site design businesses.

E-Government Act Calls for Federal CIO

The E-Government Act of 2001 was introduced in the U.S. House of Representatives last week. The act calls for the appointment of a federal CIO who would implement information policy, facilitate coordination across federal agencies, set standards and protocols to be used, and oversee procurement and funding. The act would also fortify the Federal CIO Council, which was created in 1996 to help executive branch agencies share ideas and policy recommendations.

Short Takes

Washington-based NASDAQ STOCK MARKET INC. said the launch of its boosted-up Small Order Execution System went off without a hitch.

Monday said it expects to successfully integrate the European and Japanese trading markets into the system, which greatly expands the number of trades in a single transaction and cuts delays in order fulfillment. . . . Sunnyvale, Calif.-based ARIBA Inc.'s Commerce Services Network has gained security and transaction integrity certification from the AMERICAN INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS. . . . LUCENT TECHNOLOGIES INC.'s Murray Hill, N.J., said that 8,500 of the 10,000 employees who were offered early retirement last month as a part of the company's job cuts accepted them.

MSN Messenger Outage Leads to .Net Concerns

Analysts question Microsoft's enterprise abilities after week of access problems

BY JENNIFER CHABARTO

THE RECENT week-long access foul-up with MSN Messenger left users angry and analysts questioning Microsoft Corp.'s ability to effectively manage enterprise applications and systems under its .Net initiative.

From July 3 through July 10, up to one-third of subscribers worldwide were unable to access the free instant messaging service from MSN, Microsoft's Internet service provider unit.

The initial problem, according to Microsoft, stemmed from the failure of a disk controller on a database server: the backup server also failed. About one-third of MSN Messenger accounts were on that server, the company said.

While Microsoft estimates that there are 38 million accounts worldwide, messaging analyst Robert Mahowald at IDC in Framingham, Mass., said the number of users is probably closer to 30 million.

Microsoft wouldn't specify

why it took eight days to restore service.

E-mail sent to Computerworld by irate MSN Messenger subscribers indicated a high level of user frustration. Joshua Lowe, a systems administrator at AT&T Corp., said he and a handful of colleagues use MSN Messenger to communicate between buildings at the company's Atlanta offices. It's the only free instant messaging service that works through his company's firewall, Lowe said.

"Microsoft itself has provided little to no timely or useful information regarding the status of the system," Lowe said.

Microsoft officials said they have learned from their mistakes and will be able to provide reliable service from now on.

"I feel very comfortable that this type of problem will never happen again," said MSN group product manager Bob Visse. "I would be shocked and amazed if this ever happened again."

But the initial failure and the lengthy restoration process could have implications for large corporations considering

This seriously calls into question Microsoft's ability to adequately provision a reliable enough service for mission-critical enterprise use.

MICHAEL SAMPSON, ANALYST, FERRIS RESEARCH INC.

Microsoft's .Net initiative.

"I'm very concerned about HallStorm — whether it's a good idea at all," said analyst Michael Sampson at Ferris Research Inc. in San Francisco, referring to the XML-based Web services platform associated with .Net.

"I'm very skeptical that they'll be able to pull it off, particularly in light of the eight-day outage," he said. "If Microsoft themselves can't get it

right and reliable, then... this goes to prove that their products are not ready for prime-time use in the enterprise."

The reliability of .Net should be paramount, Mahowald said.

"You need to build a system of redundancy and more layers than Microsoft has done," he said. Pushing Web-based applications with .Net means that those applications will depend on the same kind of service Microsoft couldn't restore for a week, he noted.

"This seriously calls into question Microsoft's ability to adequately provision a reliable enough service for mission-critical enterprise use," Sampson said. "After what's happened with MSN Messenger, and the extremely poor way that Microsoft handled it from a communications perspective, unless they were willing to sign guaranteed services up-time with big financial penalties for nonperformance, I would counsel against building an enterprise business case around this technology."

Mahowald said the way Microsoft has chosen to develop and roll out .Net may be overly ambitious, so such problems should be expected. Rival IBM's piecemeal approach to building Web services, on the other hand, is more realistic, he said. IBM's narrower focus at least indicates that it's sensitive to enterprise needs, and it already began to address those, he said.

Fujitsu Hopes to Lure Sun, IBM Clients With New Server

High-end model expected this week

BY ANDREW VANCE

Fujitsu Technology Solutions Inc. (FTS) will step up its presence in the high-end hardware market this week, when it announces a new server to compete with machines from Sun Microsystems Inc. and IBM.

Sunnyvale, Calif.-based FTS is releasing its PrimePower 2000 server with up to 128 processors, looking to attract large corporate customers that have typically chosen Sun or IBM in the North American market. Tokyo-based parent company Fujitsu Ltd. has sold the server in Europe since 1999.

An entry-level version of the server with up to eight processors, available now, will

be priced at nearly \$200,000, according to an FTS representative.

The new hardware is part of the company's PrimePower line of servers that use Sun's Solaris operating system and run on Sun SPARC-compatible processors. FTS uses its own 64-bit SPARC 64-GP chips running at up to 563 MHz on the new server.

FTS has continually stepped up its competition with Sun in the U.S., releasing several new servers this year and making storage deals with Sun rival EMC Corp. in Hopkinton, Mass.

However, one analyst said he

believes it may take some time for FTS to pose a real threat to Sun's U.S. customer base.

"I don't see anything major happening with Fujitsu over the next 12 months that would have a major impact on Sun in the U.S.," said Gordon Haft, research director of high-end architectures at Aberdeen Group Inc. in Boston. "They just don't have a strong market presence today."

In addition to the PrimePower line, FTS also makes an Intel-compatible server line called Primenergy.

Vance writes for the IDG News Service.

Southwest Airlines Pulls Flight Information to Hinder Orbitz

Analysts say move
may hurt airline

BY JENNIFER DISABATO

Southwest Airlines Co. last week fired another salvo in its battle with Orbitz LLC by withdrawing its flight data from Airline Tariff Publishing Co. (ATPCO), a company that supplies airline flight and fare information to travel agents, airlines and travel Web sites, including Orbitz.

"We are doing this to send a clear message that Southwest doesn't want to be associated with Orbitz, a site that we feel seeks to eliminate consumer choice through its exclusive agreements with the carriers it's supported by. It seeks to become a monopoly," said a spokeswoman for the Dallas-based economy airline.

Travel agents and Internet travel sites, including Chicago-based Orbitz, use Dules, Vaa-based ATPCO to obtain flight and fare information but not to make reservations.

From now on, the only global distribution system that will publish Southwest routes and fares is that of Fort Worth, Texas-based Sabre Holdings Corp., an Orbitz rival, the Southwest spokeswoman said. But Southwest doesn't open its live, proprietary reservation system to anyone, she added, so travelers who want to make reservations online will have to go to the Southwest Web site.

A spokeswoman for Orbitz, the online travel agency developed by the five largest U.S. airlines, said Southwest's decision will hurt consumers.

"We were not the only people getting [Southwest's] fares through ATPCO. Non-Sabre global distribution systems were getting their fares on the Internet" and then referring customers to book flights directly with Southwest, said Orbitz spokeswoman Carol Jozaitis.

"Southwest's decision will ultimately harm consumers. It

will now be more difficult to compare fares with other airlines," she noted.

While Southwest is known for going its own way, this move is somewhat bizarre and may hurt the company's image with its customers, said Henry Harteveldt, an analyst at Forrester Research Inc. in Cambridge, Mass.

"This whole thing between Southwest and Orbitz is turning into a holy war between the two companies," Harteveldt said. "Southwest has decided to pick up its fares and go home. As a result, Southwest has shot itself in the foot."

In May, Southwest filed suit against Orbitz, alleging that the flight search engine was giving the airlines that support it preferential positioning in search results and was posting circuitous Southwest flight plans in price comparisons against other airlines. Orbitz is financed by Delta Air Lines Inc., Continental Airlines Inc., Northwest Airlines Inc., United Air Lines Inc. and American Airlines Inc. and is supported by 450 other U.S. and international carriers.

Orbitz offered to sit down with Southwest to work out how the airline's flights should be displayed, but Southwest refused, said Jozaitis. She added that Southwest paid nothing to Orbitz for posting its flight information.

However, Southwest is committed to promoting its flight information on its own site, which accounted for 36% of all of its bookings in the first quarter, the Southwest spokeswoman said. She also said that Southwest doesn't rely very heavily on travel agents for bookings.

Southwest has some legitimate complaints about the flights and fares displayed on Orbitz, Harteveldt said, citing the fact that some Southwest

fares weren't as prominent as those of Orbitz participants.

However, Harteveldt said Southwest was also likely concerned about customers seeing lower fares from other airlines, which could tarnish Southwest's low-fare image.

"We suspect that part of Southwest's pulling out of this is they don't want the consumer to realize the emperor has no clothes," he said.

Sabre owns and runs Travelocity.com Inc., which runs one of the leading Internet travel sites and is an Orbitz competitor. Southwest's fares are no longer published on Travelocity's site, however, due to booking problems. Flights confirmed with Travelocity sometimes couldn't be confirmed.

with Southwest, the Southwest spokeswoman said. A traveler who arrived at a gate with a Travelocity confirmation may not have been booked on the flight in Southwest's system.

In a more positive development for Orbitz, the site managed to pull off a very successful Web launch in terms of visitors, according to the Nielsen/NetRatings service.

Launched at the beginning of last month, Orbitz attracted 2.07 million unique, at-home visitors during its first month, an increase of 1.9 million over the number of unique, at-home users who visited the travel site in May, the final month of its beta test. That's the highest increase in traffic to a newly launched Web site since Millipia, Calif.-based NetRatings Inc. began tracking Internet traffic in 1999, said NetRatings spokeswoman Jennifer Fan. ■

Troubled Takeoff

The launch of Orbitz has been shadowed by disputes with Southwest.



Pharmaceutical Firms Face Tech Hurdles in Clinical Trials

Plagued by lack of
standards, immaturity

BY JULIENNA DASH
LONDON

Using technology to speed up clinical trials is gaining steam in the pharmaceutical industry, but companies still face several obstacles that may keep them from reaching the full potential of the new tools.

For instance, Yamanouchi Pharmaceutical Co. is struggling with a lack of data standards for trials conducted globally, said Carl Allison, di-

rector of clinical data management at the Tokyo-based firm.

"At the end of the day, you want a clean database," Allison said last week at a pharmaceutical technology conference here sponsored by London-based SMI Group. During the next year and a half, Yamanouchi plans to standardize how it defines patient data, as well as establish Oracle Clinical as its remote database management system across its global sites, he said.

The pharmaceutical industry began looking into technology to speed up clinical trials two years ago but just started

launching full-scale projects this year, said Mark Anderson, CEO of Arc Consulting Group Inc. in Irving, Texas.

The technology itself isn't the biggest obstacle, said Pam de Rivaz, director of strategy and change management at London-based pharmaceutical company GlaxoSmithKline PLC. Companies "pend a lot of energy selecting a tool and not a lot of thought on actually re-engineering their processes," she said.

GlaxoSmithKline will spend the next year or two establishing a process re-engineering initiative to help employees get used to changes in their work, de Rivaz said.

Another problem is that the IT infrastructure in some countries is too unreliable to implement such systems, said Stephanie Rosnati, European

head of data management at Strasbourg, France-based pharmaceutical and life sciences firm Aventis S.A. Aventis has piloted electronic data management trials but plans to wait until the technology matures before using it on a more widespread basis, he said.

New York-based Pfizer Inc. recently completed two clinical trials in which patients with migraines or overactive bladders recorded drug responses in an electronic patient diary, which was then loaded onto an Oracle database, according to Stuart Pearce, a team leader for electronic data capture at Pfizer.

Pearce said that overall, patients found the technology easier to use than filling in information on lengthy forms, because the screen contained just four buttons. ■

CA Proxy Tussle Has Customers Cautious

Users say proposed takeover would be disruptive, prefer that company stay as is

BY MARC L. SOMMER
ORLANDO

DESPITE RECENT challenges, including a bitter battle over control of the company, many customers remain upbeat about Computer Associates' future and say it would be best if it remained intact.

Part of Texas entrepreneur Sam Wyly's plan in his proxy fight to oust the board and managers of Computer Associates International Inc. is to divide CA into four separate organizations. But several users

and analysts at CA World here last week took a dim view of Wyly's takeover attempt.

"It's better from the point of view of a customer for it to remain one company," said Arish Berger, manager of the operations and communications systems department at El Al Jewish Airlines Ltd. near Tel Aviv. El Al runs Unicenter 2.4 and the CA-TopSecret mainframe security application.

Sorel Jakins, associate director of infrastructure engineering at Brigham Young University in Provo, Utah, agreed.

"Getting new management

would be like having a new company, and it would be disruptive to us," he said.

The university now runs CA's Unicenter application and plans to move to Version 3.0 in the near future, Jakins said.

Bruce Focht, a business analyst at financial services firm J.P. Morgan/American Century in Kansas City, Mo., said CA's management is irrelevant, "as long as they keep supporting my product."

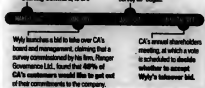
His company uses the Jasmine II portal to give customers access to financial data via the Web, something that used to be done manually by picking through paper-based reports. However, Focht added that CA, so far "had been good at listening to my concerns."

The Story So Far

A bid could happen before shareholders meet in late August.

Texas entrepreneur Sam Wyly seeks his company, Starling Software, to CA.

CA Chairman Charles Wexler denounces the survey as "toxic."



CA has been working hard to please its users with improved pricing and service offerings, noted Michael Dorch, an analyst at Robert Frances Group Inc. in San Francisco.

"People are starting to see the fruit of those efforts by CA," he said. "Now would be a terrible time to derail them." Although Wyly didn't attend the show, his investment company published an open-letter

advertisement in USA Today last Monday in an attempt to appeal to CA users.

Executives of Islandia, N.Y.-based CA focused mainly on new products at the show, but they did spend some time making their case to users by defending their management practices and their treatment of customers and employees—points Wyly has attacked them on time and again. ■

Continued from page 1

CA Lineup

BrightStar brand, security will fall under the eTrust lineup, and the portal, knowledge management, visualization and other technologies will be part of the Jasmine II middleware offering.

Grasping the CA product lineup has long been challenging and frustrating for many users and analysts. With more than 1,200 products in the CA catalog, it's no surprise that it

has been difficult to navigate. Part of the problem has been that the company was assembled from numerous acquisitions and "was all over the place," said Karl Jackson, a systems specialist at Provo, Utah-based Brigham Young University (BYU), which uses CA's Unicenter management software.

But the company is finally making the lineup much less confusing and easier to grasp, Jackson said.

Nevertheless, Kumar acknowledged that CA has its work cut out for it as it tries to

explain just how the new lineup will help customers.

"We have to rely on 3,000 people in the field in 60 countries communicating [the] lineup, and we have to rely on all kinds of technical people and business people understanding it, and that's an area we could always do better in," Kumar said in an interview with Computerworld.

Users haven't seen the breadth of products CA offers in areas such as security, according to one analyst. "If you look at them on a per-product basis [in security], IBM and CA are probably about dead even," said James Hurley, an analyst at Boston-based consultancy Aberdeen Group Inc. "But if you go outside the point solutions and look at it from the perspective of integration, CA is way ahead of IBM at this point."

As expected, CA made its biggest splash around Unicenter 3.0. However, Unicenter's advanced help desk could use some additional management reporting features, said Mike Stevenson, an enterprise administrator at the Peel Region-

al Police data center in Brampton, Ontario.

The data center uses Unicenter 2.4 to support 2,000 end users relying on Windows NT and OpenVMS servers. A Unicenter 3.0 beta tester, Stevenson said he wants to see re-

placements in the system that make more financial-related IT information accessible, such as return on investment or total cost of ownership data for products.

But not everyone is rushing to use the new Unicenter. At El Al Jewish Airlines Ltd., based at Ben Gurion Airport near Tel Aviv, the IT department plans to take its time upgrading from Unicenter 2.4 to 3.0, said Arish Berger, manager of operations.

The airline recently went live with Unicenter 2.4, which took a year to assemble. Although CA provided good ser-

AT A GLANCE

Regrouping

CA's core product areas were first outlined last month.

Enterprise management issues under the Unicenter flag; application line.

Storage applications will become part of the newly christened BrightStar brand.

Security software will fall into the eTrust lineup.

Web integration kits, portals and knowledge management, and predictive analysis and visualization tools fall under Jasmine.

vice, "the product was not easy to implement," Berger said.

The application's enhanced business process view feature is of particular interest to Sorel Jakins, associate director of infrastructure engineering at BYU. The university has been beta-testing Unicenter 3.0 and has plans to launch it throughout the CA campus.

BYU relies heavily on student

staffers to do network monitoring, and it's much easier to train them on a product that has an easy-to-follow graphical user interface, said Jakins.

Unicenter Version 3.0 automatically identifies potential problems in the network that could affect priority systems, without needing an IT staffer to drill down deeply and discover them manually, Jakins noted. ■

New Products

Last week's CA World conference drew 30,000 users, only half of last year's attendance. Those who made it to the show heard about the following new products:

■ **Unicenter 3.0**, which CA boasts is a modular enterprise management product with advanced business process views and visualization features.

■ **The BrightStar storage product line** and the **BrightStar Enterprise Backup application**, which CA says manages multiple servers through backup operations.

■ **The eTrust Internet Access Solution Set**, which CA claims offers comprehensive Web access control for customers, suppliers, employees and partners.



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Vendors Dream Up Ways To Extract More Revenue

New fee schemes for client/server software may actually increase user costs. By Jaikumar Vijayan

A RAPIDLY maturing market for client/server software is driving fundamental changes in the way vendors price, support and upgrade their products.

For software vendors, the goal is to ensure a predictable, long-term revenue stream from existing customers — via subscriptions, services and add-on fees — to make up for sluggish revenue growth from new licenses.

So users need to be extra vigilant when they negotiate client/server software contracts in the next few years.

Pricing changes, combined with a growing user dependency on distributed software, could lock companies into the same kind of costly situations that mainframe users have complained about for years, users and analysts said [Techworld, Jan. 10, 2000].

"Vendors are focusing on future revenue streams," said David Floyer, an analyst at IT Centrix Inc., a consultancy in Framingham, Mass. "Where in the past they would have been happy just to get new licenses, they are now focusing on how they can grow revenue from the licenses they already have installed."

Of course, the trend conflicts with users' needs to keep costs down, said David Krauthamer, MIS manager at Advanced Fibre Communications Inc. in Petaluma, Calif.

"It is a concern basically because what vendors are trying to do is lock themselves into user accounts" with long-term

contractual tie-ins, he said.

Specifically, there's a growing trend away from the perpetual, per-user and per-server licensing structures that have been standard in the client/server world for years, said Krauthamer.

Instead, vendors are pushing a variety of new pricing models that present both opportunities and land mines for users.

Perhaps the most prominent example is Microsoft Corp.'s recently unveiled subscription-based purchase option Called Software Assurance, the option will allow certain classes of Microsoft customers to rent their software for fixed periods of time, starting Oct. 1 [Page One, May 14].

The subscription model could be cost-effective for users who upgrade every time a vendor comes out with something new, but not necessarily for companies that tend to skip product generations.

Microsoft says costs for most users who choose the new option would stay the same or decline over time, but analysts have a different view. One researcher has predicted that costs could soar 68% to 107% for users who upgrade every four years.

Subscription Skepticism

Some users are cynical about the pricing changes.

"Companies don't change pricing models because they are looking to get customers huge savings," said Pat Enright, director of information systems at Clark Retail Enterprises Inc. in Oak Brook, Ill.

The pricing changes are Mi-

crosoft's first step toward eventually licensing most of its software as a service. And analysts said other vendors are likely to follow Microsoft's lead.

Others have released online versions of their products hosted by application service providers (ASP), which users can rent or subscribe to on a term basis. For instance, Lotus Development Corp. allows ASPs to deliver a collection of self-service applications and to automatically charge for those licenses based on the number of activated users per month. With most ASP models, companies pay for the software license upfront and strike multi-year maintenance deals so they don't have to deal with upgrades or technical problems.

Oracle Corp. recently added a new wrinkle to the ASP model when it announced that users will be able to run certain versions of its E-Business suite on their own servers while Oracle handles the administration and support work [News, July 2].

Perpetual licenses worked because vendors were able to get customers to keep upgrading their software with the promise of a few new features or upgrade incentives, said Ditta Reiner, president of Reiner Associates Inc., a contract management consultancy in San Francisco.

But market leaders such as Microsoft, Oracle and SAP AG are increasingly selling to a mature base of customers who have been using their products for several years. Such customers aren't likely to move as quickly as they once did to every new release that becomes available, Reiner said.

Instead of trying to sell their software outright, vendors will try to get their revenues from long-term contractual tie-ins, such as maintenance, upgrade

and support agreements. Capabilities that were sold as standard parts of packages will come as separately priced options. Upgrade services will be tied to technical support; users won't be able to get one without the other.

The trend is already raising concerns at Millipore Corp.,

where support costs for distributed software have risen from 12% of a product's purchase price a few years ago to more than 20%, said Paul Kaminski, director of contracts at the maker of purification products in Bedford, Mass. He said Millipore is paying for upgrade options and bug fixes that it rarely or never uses.

"From a customer standpoint, we are simply not seeing an equivalent value for the increase in support costs," Kaminski said, adding that if costs keep escalating the way they are, the company may start looking at other options, such as Linux.



Migrating to Linux wouldn't be a trivial task, Kaminski acknowledged. "But you'd do it if you reach breaking point," he said.

In many respects, the situation in the client/server market today is no different from what mainframe users faced back in the late 1980s and the early 1990s, Floyer said.

For IT managers, capacity planning and asset management are the keys to coping with the new pricing models, said Marie T. Reeve, vice president of Cicla & Associates LLC, an IT procurement consultancy in Hoboken, N.J. "You need to know what you have and what you need to secure the appropriate licenses."

To avoid getting caught in a bad deal, consultants and savvy IT managers offer the following recommendations:

■ **Get it in writing.** Be sure the contract identifies the license, support and maintenance implications of adding users or upgrading functions.

■ **Establish a good software asset and license management program.** Know what software you own and how many people are really using it. Know when software contracts are due to expire or come up for renewal. This information is crucial when negotiating software contracts.

■ **Look ahead two or three years.** Negotiate contractual clauses that address what would happen if you suddenly downsized or decided to reduce the use of a particular product.

The cost of not doing that can be very high, warned Forrest Eudaily, an associate director at Whitehall-Robins Healthcare, a \$1.7 billion maker of over-the-counter drugs in Madison, N.J.

Because of the way Whitehall-Robins negotiated a mainframe software contract several years ago, it's still paying the same maintenance fees on the software, even though actual usage has dropped to a fraction of what it was a few years ago.

"When you talk with your vendor, you need to have a few 'what-if' scenarios that are contractually spelled out if you don't want to get locked into a huge annual license expense," said Eudaily.

■ **Know your upgrade profile.** If your company upgrades frequently, it might make sense to get on a software subscription service or upgrade plan. But if your typical upgrade cycle runs more than four years, it might be better to purchase outright, Reeve said.

That's because the cost of paying for

an upgrade option fee annually for five years will be almost the same as buying a product outright once every five years, she said.

■ **Prepare for vendor mergers.** Make sure the contract terms don't change if the software vendor is acquired or merges with another company.

Holyoke Mutual Insurance Co. is learning that the hard way. A few years ago, the Salem, Mass.-based firm purchased a multiyear maintenance contract on an enterprisewide storage product from a vendor that was later acquired. After the acquisition, Holyoke lost a crucial capability it had negotiated and paid for in the original contract relating to the number of servers on which it could do backups, said Josh Turiel, Holyoke's network services manager. Now the company's looking for another vendor.

"Needless to say, we got screwed by that," Turiel said ruefully. "I am going to do my damndest to make sure that [in future contracts], no one takes away what I have negotiated for."

■ **Centralize purchasing as much as possible.** For instance, instead of having multiple business units separately deploying their own customer relationship management software using per-processor licenses, it may be cheaper to run them all on centralized servers using a single enterprisewide license.

■ **Have a realistic tally of how many and users will actually use the application.** An enterprise license based on the total number of company employees may be far more expensive than one based on the number of actual end users.

None of the licensing models are inherently bad. The danger lies in getting into long-term deals with the wrong model, noted Advanced Fibers' Krauthamer.

That's why Krauthamer says he loves the short-term agreement he negotiat-

ed with his database vendor. It has allowed him to test the software inexpensively for six to nine months — and pay for it only after it demonstrates value.

"The approach really minimizes the risk," he said. And it "helps out greatly in avoiding the train wrecks" he added. ■



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PAT EHRHART, DIRECTOR OF
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Bush Plans National Cybersecurity Board

Panel of senior security officials, rather than single czar, would lead coordinated effort

BY DAN VETTER
WASHINGTON

THE BUSH administration plans to create a board of senior national security officials to oversee the federal government's critical infrastructure protection efforts, eliminating the idea of designating a single cybersecurity czar, sources said last week.

The move reportedly was agreed upon during a July 2 meeting with President Bush, who gave National Security Adviser Condoleezza Rice and other officials the green light to prepare a draft executive order that would set up the Cybersecurity and Continuity of Operations Board. The sources said the meeting lasted for more than an hour, though initially scheduled for just 20 minutes, and resulted in a proposed plan that's now being circulated for agency comment.

A final version of the order is expected later this year. Sources on Capitol Hill who asked not to be identified said the proposed structure eliminates the notion of giving cybersecurity responsibility to one official, in favor of appointing a board with representatives from the Defense, State and Commerce departments, as well as the intelligence community and other government agencies.

Richard Clarke, the longtime national coordinator for security, infrastructure protection and counterterrorism at the White House, is seen as the leading contender to be named chairman of the proposed panel. Under the new structure, Clarke would likely give up his counterterrorism role in favor

of exclusive cybersecurity duties, according to the sources.

Ken Watson, director of critical infrastructure protection at Cisco Systems Inc. and president of the private-sector Partnership for Critical Infrastructure Security in Washington, said the general reaction from corporate officials to the draft presidential order has been positive.

"No single government agency can do all that's needed to protect technology infrastructures, especially when that includes liaison with industry, oversight of federal budgets and international cooperation," Watson said. "We [think] that a board headed by a presiden-

tial advisor provides the right breadth and emphasis."

Kim Kotlar, an assistant to Rep. Mac Thornberry (R-Texas), said establishing a high-level cybersecurity office would be a good first step in the government's approach to the problem. However, "there are many unanswered questions on how such an organization would work and what its mission would be," she said.

The new plan also leaves open the option of allowing the members of the National Infrastructure Assurance Council (NIAC) and the National Security Telecommunications Advisory Committee members to expire on Oct. 1, according to sources familiar with the draft order. Just before he left office in January, former President Bill Clinton appointed 21 people, many of them longtime



RICHARD CLARKE is likely to chair the new cybersecurity panel.

Democratic Party supporters, to the NIAC. Terminating those appointments would simply be a way for the Bush administration to put its own team in place, the sources said.

Harris Miller, president of the Arlington, Va.-based Infor-

mation Technology Association of America and a member of the NIAC, said he would still prefer to see Bush name a cybersecurity czar in order to give companies and trade groups a single point of contact on security issues.

The proposal to create a centralized, coordinated security effort makes sense if it's done properly, Miller added. "The crucial challenge of this effort will be to ensure that the leadership from the White House is meaningful and that a new talking shop is not created, where problems are discussed but solutions not found," he said.

Sources close to the White House said the executive order is likely to be issued in September, when the next version of a national plan for protecting information systems is scheduled for release.

However, the sources said publication of the next version of the national plan will likely be delayed to allow the proposed new board to put its own imprint on the document. The plan was initially released in January last year. ■

Hole Discovered in Check Point Firewalls

Proprietary protocol puts networks at risk

BY AJAYKUMAR VIJAYAN

A vulnerability in Check Point Software Technologies Ltd.'s Firewall-1 and VPN-1 firewall products may allow intruders to tunnel illegitimate traffic into or out of corporate networks.

The hole was discovered last month by Inside Security GmbH, a spin-off of the University of Stuttgart's security team in Germany. The hole could be exploited to passively snoop inside corporate networks or to launch certain types of denial-of-service attacks, according to the CERT Coordination Center security response team at Pittsburgh-based Carnegie Mellon Uni-

versity, which issued a bulletin on the vulnerability last week.

"This is a pretty serious vulnerability [because] Check Point is one of the most widely deployed firewalls on the Internet," said Ian Finlay, a member of the CERT team.

The vulnerability involves Check Point's proprietary Reliable Data Protocol (RDP), which is used in the company's firewalls for internal communication among software components. By default, VPN-1 and Firewall-1 allow RDP packets to traverse firewall gateways to simplify encryption setup, according to Check Point's advisory.

Under some conditions, malicious packets with RDP headers could be constructed and allowed through the firewall.

"It would be a rare and obscure instance" for anyone to

take advantage of this vulnerability, said Greg Smith, a director at Check Point. "We know of no customers who have been affected by this."

According to Smith, only authenticated and authorized firewall administrators would be able to take advantage of the vulnerability to create problems. "It in no way allows any external hacker to penetrate or attack networks," he said.

Users can get around the problem by installing a patch from Check Point. Until the patch can be applied, users can configure their routers to block access to the port that's exploited by the vulnerability, CERT said in its advisory.

Although no security incidents related to this vulnerability have been reported, CERT is recommending that all affected sites upgrade their

software as soon as possible.

"The thing to keep in mind is that the very nature of a firewall is to block traffic from reaching your internal network. This is a situation where that assumed fundamental protection [is breached]," said CERT member Shawn Herrera. ■

“

This is a pretty serious vulnerability [because] Check Point is one of the most widely deployed firewalls on the Internet.

CERT TEAM MEMBER IAN FINLAY

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BRIEFS

Compaq Moves to Cut More Jobs

Compaq Computer Corp. last week announced plans to lay off another 4,000 workers because of continued weak demand for its systems. That brings the total number of jobs due to be eliminated this year by the computer vendor to 6,500. Compaq said it expects second-quarter operating earnings to be consistent with projections by financial analysts, with revenue coming in at about \$8.4 billion - a decrease of 9% on a sequential basis and \$800 million less than the company's original goal. The company indicated that more cutbacks are needed to cope with an increasing global slowdown in IT spending.

AuroraMetrics Agrees To Cisco Buyout

Cisco Systems Inc. said it has reached an agreement to acquire AuroraMetrics Inc., a privately held company in San Jose. Both companies' boards of directors have approved the \$150 million all-stock deal. Cisco said it wanted the AuroraMetrics chip technology gained through the purchase to help service provider customers create "innovative packet-rings" networks that will carry IP and Ethernet traffic at 100 Mbit/sec.

Short Takes

ALCATEL SA announced plans to lay off an additional 2,500 employees at its U.S. operations, the third U.S. workforce cutback made by the telecommunications equipment maker since early April. . . . NCR CORP. said its second-quarter profits will likely be about 40% less than earlier analyst projections because of deferred purchases by some users. . . . STANDARD AND POOR'S lowered its ratings on Mountain View, Calif.-based SILICON GRAPHICS INC., saying the company's outlook is negative because of a declining revenue base, ongoing losses and limited financial flexibility.

Deal Advances EMC's Move Into NT Space

Joins venture with Microsoft, Accenture

BY LUCAS MEARIAN
AN E-COMMERCE venture backed by Microsoft, Accenture has set up EMC Corp. to provide storage services for Windows 2000, SQL Server and Exchange customers.

Avande Inc. said last week that the deal will allow it to expand its offerings from mainframe to networked storage technologies. For storage market leader EMC, the deal provides a foothold in the Windows NT server market, one of the fastest-growing sectors in the storage industry.

Don Swartz, vice president of global alliances at Hopkinton, Mass.-based EMC, said his company has made inroads into the NT environment during the past two years and that the partnership with Avande will greatly advance that effort. "We're obviously seeing NT as a very significant growth area," he said.

Tony Frigmore, an analyst at The Enterprise Storage Group Inc., a market research firm in Milford, Mass., said the partnership could be a boon for EMC, which recently announced layoffs and big drops in sales and earnings. Earlier this month, EMC announced its second profit warning in four months, indicating that second-quarter profits will likely be only about approximately one-third of what was expected.

"Being selected as the storage building block for Avande means that you'll be recommended to Microsoft's premier NT client base as the de facto enterprise-class infrastructure," Frigmore said.

Seattle-based Avande, which was formed in April 2000 as a nearly \$1 billion joint

venture between Microsoft and Chicago-based Accenture, designs, builds and deploys customized IT architectures for Windows customers. Avande has relied on direct-attached, mainframe storage architectures, but its alliance with EMC will now place it in the storage-area network (SAN) arena, where many of

its customers already have IT architectures.

"Over time, storage hardware can be commoditized," said Kevin Adams, director of technology alliances at Avande. "It's truly the software that can bring out the unique characteristics of the hardware, and clearly, EMC is years ahead with the capability of hardware and software working together."

Adams noted that the deal

ATG Recalibrates Strategy For E-Commerce Line

Struggling vendor ports suite to run on other app servers

BY LEE COPELAND

Struggling Art Technology Group Inc. (ATG) last week detailed plans to port its suite of e-commerce applications to competing platforms, a strategy that analysts characterized as a necessary but risky move.

Cambridge, Mass.-based ATG said its application suite will run on Web application servers from BEA Systems Inc. in San Jose, Hewlett-Packard Co. and Palo Alto, Calif.-based iPlanet by year's end. ATG will continue to support its own flagship Dynamo application server, but the new strategy will put greater emphasis on its application set, said Jeet Singh, ATG's CEO.

ATG's suite includes a commerce server with storefront and online selling functionality; a scenario server for providing and defining e-business relationships; and a personalization server for targeting online customer shopping patterns. ATG's Dynamo application

server is currently required to run those applications.

"It's going to be a tough transition for ATG, because what will anyone buy the [application] server now?" said Jim Murphy, an analyst at AMR Research Inc. in Boston. "The larger companies have already standardized on IBM and BEA, so it will be a struggle for them to distinguish their applications against the rest."

Singh said adopting an "ap-

proach and supporting some other platforms" was the best option to stay competitive in the current economy.

ATG, as well as rivals BEA, HP, IBM and iPlanet — an alliance between Sun Microsystems Inc. and Netscape Communications Corp. — each support Sun's Java 2 Enterprise Edition (J2EE) specification.

Compatibility with J2EE should make it easier to run ATG's applications, said Randy Heffner, an analyst at Giga Information Group Inc. in Cambridge, Mass.

"The promise of portability [among J2EE application servers], though not perfect, is pretty good," he said. "It bodes well for J2EE, and [J2EE support] will help ATG sell into customers who don't want another application server."

Heffner said IBM and BEA should gain market share this year, though it's too early to tell which vendors will lose market share. Application pricing on the new platforms hasn't been determined.

Earlier this month, ATG said off 220 workers and issued a warning about its second-quarter earnings. ATG said it expects to post a loss of 17 to 19 cents per share on revenue of about \$34 million for the period ended June 30. ATG's stock closed at a 52-week low of \$3.48 per share last week. It peaked at \$126.88 last July. ■

The Marketplace

Market leaders last year in the J2EE-compatible application server market

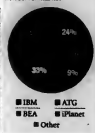


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MARK HALL

Farewell to FUD

LISTENING TO MICROSOFT executives react to the U.S. Court of Appeals ruling late last month, you'd think Scott McNealy had just embraced Windows and announced that the only Java offered at Sun was from baristas. It was that surreal.

The Redmond crowd sounded so upbeat, it was difficult to keep in mind that they were endorsing a decision that convicted their company of breaking the law. And not just any law — the Sherman Antitrust Act.

Sure, Bill and Steve can spin the decision as a vindication for product innovation and software bundling. But only up to a point. The appeals court said that as a monopoly, Microsoft can't bundle software in ways that protect its monopoly. And because Microsoft has accepted the court's decree so readily, it must change its ways.

As an IT manager, you should now be able to confidently deploy applications that depend on technology, from Oracle databases to RealNetworks' streaming media, without worrying that Microsoft will leverage Windows to undermine your choice. That would clearly be illegal.

By admitting its monopoly status, Microsoft has also eliminated one of its most potent marketing weapons: fear, uncertainty and doubt (FUD). Instead of using its monopoly to dis-



MARK HALL is Computerworld's West Coast editor. You can contact him at mark.hall@computerworld.com.

lodge a competing product, Microsoft will have to compete on the merits of its technology.

Some doubt that Microsoft can change its spots. But on the issue of OEM licensing, which was held as a specific antitrust violation, the company announced last week that it has reversed its previous limitations on what Compaq, Dell, Gateway and other PC makers can do with Windows in key areas such as icon placement and Start Menu options.

And it plans to add Internet Explorer to the add/delete program in Windows XP.

That shows good faith. It could be a signal that the company intends to apply its vast fortune and engineering talents to building great products that compete freely in the market, instead of being dragged to success by Windows interdependencies.

But it's only a beginning — and it bears close watching. Hopefully, what IT will see is a lot more cool technology and a lot less market-cooling FUD. ■

PIMM FOX

Project a Mess? A Charter Can Help

PROJECT MANAGEMENT doesn't get people energized unless something goes wrong. Yet sorting out responsibilities, resources and direction once a project is under way is as difficult as fighting multiple wildfires.

That's why a written and signed charter explicitly acknowledged by all participants is crucial to a successful IT project — especially since most IT projects involve multiple users and stakeholders.

Take the case of the National Interagency Resource Ordering and Status System (ROSS).

This IT project, developed by the National Wildfire Coordinating Group, is a software program designed to automate the ordering, status and reporting process for people and equipment needed to respond to wildfires and other emergencies, such as tornadoes and hurricanes.

Several government agencies, including the Bureau of Indian Affairs, the Bureau of Land Management, the U.S. Department of the Interior, the U.S. Fish and Wildlife Service, the National Park Service, the National Information Technology Center and the U.S. Forest Service, as well as state representatives, had to buy into the idea and sign off on the charter.

Jon Skeels, the ROSS project team leader in Golden, Colo., says a large percentage of IT projects fail because charters aren't constructed to show stakeholders how the projects will be financed, what the deliverables are and when the milestones would be. He says IT projects without clear buy-in from top-level management founder when conflicts arise because participants have competing visions of success. "A charter signed by all the participants is the best way to keep everybody on board," Skeels says.

Skeels traveled to the nation's 400 dispatch and coordination centers — which handle from 100 to 1,000 daily requests for crews and equipment, primarily by telephone — to gather input about how ROSS should be planned.



PIMM FOX is Computerworld's West Coast bureau chief. Contact him at pimm.fox@computerworld.com.



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In one example, Skeels was in Fairbanks, Alaska, and learned there was no common, national order form for crews. As a result, the charter accommodated regional needs.

Currently, the status of emergency resources is broadcast in the morning from the National Interagency Coordination Center in Boise, Idaho. That information is old by the time it's received by dispatchers.

ROSS, slated for a limited rollout this summer, will eliminate the need to manually re-enter orders from dispatch offices. Instead, it will provide real-time ordering capabilities for aircraft, equipment, supplies and firefighting crews, as well as requests for infrared imagery and temporary flight restrictions. Using ROSS, a dispatcher will be able to check location and status of aircraft in an area, rather than having to call around to check availability.

With meager rainfall, hot temperatures and a snowpack at 60% below normal, firefighters need all the help they can get this season.

A signed charter for ROSS was a first step. ▀

JOHN GANTZ

IT Professionals: Happy Today, But Tomorrow?

THREE ITEMS struck me from the story on Computerworld's recent Annual Job Satisfaction Survey [Business, July 2]. The first was the low score most IT professionals gave for their opportunities for advancement; the second was the high satisfaction most had with their careers; and the third was the high percentage of IT professionals who said they weren't working to

their full potential.

What do we have here? Happy people with no future?

IT pros are up against a career conflict to which there is no resolution. It's the nature of the work vs. the nature of the job.

In the mid-1980s, my company conducted a study of what gave IT professionals satisfaction in their jobs. We were motivated by an academic research paper we'd seen that ranked "computer professional" as the highest among a slew of occupations when it came to work "actualization," academic-speak for "they liked doing the work itself." Our study, designed

to help IT managers motivate employees, confirmed this: Employees were addicted to the constant puzzle-solving of systems analysis, the poetry of code creation and the thrill of getting new programs to work.

I'm picking up the same vibes from the Computerworld survey. People like their work but may not be going where they think they should with it.

More than 15 years have passed since the IDC study, and a lot has changed. IT budgets command about twice the corporate expense stream they once did, business executives understand (all too well, sometimes) IT's value, IT professionals are more attuned to their companies' business problems, and the world is computer-literate. The work of the IT profession has morphed considerably, from the care and feeding of large computers and the writing of custom applications to the deployment of massive enterprise applications based on the work of others.

But a dichotomy still exists. There may be enjoyment in solving the puzzles of IT, but that's less and less of the job. More and more of it involves daily negotiations with peers, suppliers, managers and employees — which sounds more

like how a salesperson would be satisfied than the Cobol programmer of yore would be.

My advice is all this? Forget about your career and focus on the job at hand. A career is only a succession of jobs, anyway. If you like coming to work, like what you do, like the people you work with and are learning something, you're on a good path. If you like the work, you'll know what it takes to do it better — meaning that you'll make good choices when you change jobs.

What about getting ready to climb the next rung of the ladder? What skills should you be working on?

That's easy. You'll need people to like you and respect you, which, in my 25 years of work experience, is one of those things that you either have or don't. Other than that, the single most important skill you can pick up is public speaking. You'll need to be comfortable in a group when you're giving a presentation, which is what you need to win project approval, get a budget increase, explain project risks and win those daily negotiations that your job will become. All this beats technical skills.

And, oh yeah, show up on time and stay sober. ▀

READERS' LETTERS

Defending Linux

THOUGH I'M A Linux user and supporter, I have to agree with much of what Bill Laberis wrote in his column "Linux Is Full of Funnies, Potential" [News Opinion, July 2]. But I have to take exception to his statement that "the biggest obstacles to its broad acceptance... are a lack of open-source standards, multibillion-dollar investments in installed proprietary software and investments in training to use that installed base." The lack of open-source standards was largely overcome with the announcement of the Linux Standards Base (LSB). The investment in installed proprietary software may be a factor for users of mainframes and commercial Unix, but given that Microsoft is forcing the vast majority of its customers to upgrade much of their software every two to three years, many would

be better off in the long term if they switched to Linux. As for the investment in training, the only people who would be seriously harmed by switching would be MCSEs who have no experience with anything other than Windows, and possibly Visual Basic programmers. But most users have to undergo a certain amount of retraining after each upgrade anyway.

Alan Orlin
Software developer
Huntville, Ala.

Editor's note: News of the approval of LSB 1.0 came out the day after the column was published. The LSB is seen by some as an important step toward ensuring that the core Linux code can run across different implementations.

IT MAY BE true that fewer than 10% of servers ship with Linux today, but that doesn't necessarily reflect the real-world usage patterns. I used to buy servers, ordering them with a single

license for NT Server 4.0, because I couldn't easily obtain a machine without an operating system. I then ensued the hard drives and installed Linux. It was great. No license management to worry about. No per-seat agreements. And there's something pleasing about seeing this "3.29M" up 192 days, 18:48."

Adam Dele
University of Texas
Houston Health School

Give Me Some Slack

I WAS GLAD to see the topic of "Prescribing Slack" [Business, July 2] discussed in your magazine. It's always amazed me how a company will push an employee to the point of working overtime and then wonder why the employee isn't doing more. The employee has to be reactive just to stay up with the workload.

Joe Gaydos
WorldCom Inc.
Indianapolis

Where's Rest of Story?

AFTER READING the In Depth report on security [July 9], I feel that Computerworld told only half the story. Reporting on all of the methods to shore up security is nice, but what about the people who are creating the security concerns? Who are these people — the crackers, hackers and carders? Profiling them will provide the necessary solutions to the problems facing Internet crime.

Dan Clements
CardCop.com
Malibu, Calif.

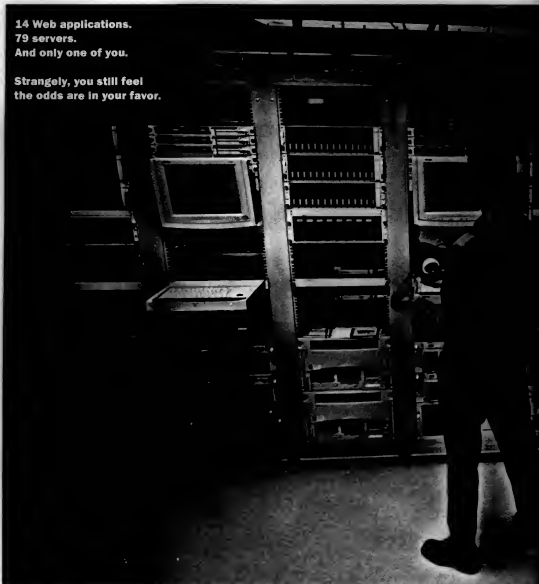
COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to: *James Egle*, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4043. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.



James Egle is a senior vice president at ROC in Framingham, Mass. Contact him at jegle@roc.com.

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MICROSOFT APPLICATION CENTER 2000

Web server farms have always been known for providing high application availability in a cost-efficient manner. Unfortunately, in the past they have also been known for manageability headaches. But no more: Microsoft Application Center 2000 now makes managing Web applications and groups of Web servers as simple as managing a single server.

Part of the flexible Microsoft .NET Enterprise Server family, Application Center 2000 is built to be the heart of a "scale-out" infrastructure model. "Scaling out" is a flexible approach to scalability that involves deploying Web applications across multiple servers to distribute and handle the workload.

Application Center 2000 makes scaling out easier, with unified Web application and server-farm management that simplifies tasks

MARKET FACT

"The scalability benefits offered by Application Center made it possible to migrate to a distributed Windows platform. Application Center gives us on-demand scalability and is a powerful tool for managing Windows 2000-based Web server farms."

—Mike Boonin, Production Services Manager, Terra Lycos

like cluster management and application deployment. Plus, it makes it easy to achieve capacity on demand through automatic replication of applications when you add servers or make changes to existing applications. But simplicity is not all you get:

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DON TAPSCOTT

Be Prepared for The 'Hypernet'

HITACHI's remarkable new Mew chip is just another example that we're "on the second half of the chessboard" — a phrase coined by the brilliant inventor and author Ray Kurzweil to describe the pace of today's technological advances.

The chip measures less than half a millimeter per side and includes 128 bits of read-only memory



DON TAPSCOTT is president of New Paradigm Learning Corp. and co-author of *Digital Capital: Harnessing the Power of Business Webs* (Harvard Business School Press, 2000). Contact him at: don@theclaylight.com

and radio-frequency wireless circuitry that can transmit up to a foot away. One of myriad possible uses for the tiny chip (many of which are chilling from a privacy perspective) is to weave it into paper money, which would allow authorities to track the movement of cash and immediately detect counterfeit bills. Mew illustrates why the turmoil unleashed by the Internet in the past five years pales in comparison with what will happen in the next five. Mobile

computing devices, broadband access, wireless networks and computing power embedded in everything from bicycles to factory tools are converging into a vast global network — a Hypernet — that will fuel exponential change in business-model innovation. The Hypernet is to the Internet what the Internet was to early proprietary computer networks.

Kurzweil's chessboard analogy harkens back to a story of a Chinese emperor being so delighted by the game of chess that he offered the game's inventor anything he wanted in the kingdom. The inventor replied that he wanted only rice.

"I would like one grain of rice on the first square of the chessboard, two grains on the second square, four grains on the third square," and so on. Thinking this would amount to little, the emperor readily agreed.

But fulfilling the inventor's request is impossible. If you were to double the grains of rice with each square, the final square would require more than 9 quintillion (a 9 followed by 18 zeroes) grains of rice — enough to blanket the world. While the amounts of rice are minuscule at first, they become substantial — more than 2 billion grains — once you're halfway across the chessboard. Kurzweil originally made his comparison to computers in the early 1990s, noting that

processor power had already doubled 32 times since the first computers in the early 1940s.

We're now on the second half of the board. The gains achieved in digital technologies grow more astounding by the week. And in many technologies, there's no end to the gains in sight.

Transistors will continue to shrink, processor power will continue to double and redouble, chips will be embedded into every object. Internet bandwidth will continue to expand, and human beings will create more Web-based solutions for everyday problems.

Tomorrow's Hypernet will comprise a billion Net-connected mobile phones and billions of networked game consoles, handhelds, toys and information appliances. Devices are already proliferating and morphing into a bewildering variety and approaching throwaway prices. Computing is becoming so ubiquitous that it's receding into the background. In the age of the Hypernet, business-model innovation will be essential to capture value created by new kinds of transactions and new ways of managing existing transactions. The pace of innovation will accelerate, and obsolete enterprises will be quickly eclipsed. ■

WILLIAM M. ULRICH

Keep It Simple: Try Integrated Tools

IT'S AN AGE-OLD question: Should IT acquire an integrated set of software management, maintenance and development tools, or should it license a series of point tools, each with niche functionality? The vendor community offers you a choice. But what's the best option? In general, an integrated tool suite offers advantages over a collection of niche products.

As IT seeks to automate software specification, development, enhancement and management activities, the number of software products fulfilling these requirements is growing. For example, tools that help analysts and developers build and deploy applications are rapidly evolving. Many niche tools, which individually provide Universal Markup Language (UML) visual object modeling,

source-code editing and debugging functions, have been bundled into integrated development environments (IDE).



WILLIAM M. ULRICH is a management consultant and president of Tactical Strategy Group Inc. Contact him through will@tacticalstrategy.com

Integrated product suites extend well beyond IDE. Software tools can also help IT managers and developers track project progress, coordinate company-wide personnel use and account for the many documents that are byproducts of these projects.

Additional products help maintain and enhance the IT knowledge base by capturing and cataloging user requests, requirements and documentation in a knowledge repository. White-board tools allow business and IT analysts to exchange ideas via virtual meetings. These collaboration tools allow IT to streamline ongoing communications with users and customers to expedite projects and meet critical business requirements.

But why should IT care if these products are delivered as stand-alone tools or as part of an integrated suite? Because the tasks performed and the deliverables produced by these tools are related. To effectively leverage the capabilities of individual tools, the information these tools produce needs to be leveraged by related tools. For example, a UML model produced by one tool might be used by an IDE to generate a Java application.

The level of tool integration offered by software vendors varies. They can bundle internal or third-party tools under a product suite, or deliver a framework with integration interfaces to third-party tools.

The ideal is an integrated product suite, with a rich set of functional tools that can integrate with third-party products. This approach provides a product framework, delivers baseline functionality and accommodates other tools already in use. Integrated product suites also reduce the number of vendors you need to deal with and allow you to train people on just one product, simplifying the product acceptance and deployment process.

Ideally, a vendor offering a software product suite meets the following criteria: The product should provide a framework with a Web-enabled interface, it should have a rich set of integrated, functional tools created by the vendor and acquired or licensed for bundling into the product suite. Such a product should have an open repository that facilitates the exchange of information from one tool to another while offering an open interface to other third-party products.

For example, a collaborative work environment might include tools for project management, resource tracking, analysis and design and document management, as well as other tools to simplify enterprise project tracking and deployment. This product should also be able to move information between stand-alone tools. This provides IT with an integrated product suite that accommodates niche products already in use.

Consider these fundamental requirements when looking at your next product acquisition. Selecting an integrated suite that accommodates third-party products will simplify the acquisition, deployment and management of your software tool environment. ■

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BUSINESS

E-GROCER WOES

After several last-ditch efforts to stay afloat, Webvan is finally throwing in the towel. Now, as its competitors struggle through the industry's rough waters, one question remains: Just how viable is the online grocery business? **» 38**

IT ON GUARD

It's amazing how few companies take IT security seriously enough to prepare for attacks, writes Kevin Fogarty. In the e-commerce world, you need to be vigilant — not gutsy — in your efforts, long before trouble starts. **» 38**

SEAMLESS SYNCHRONICITY

"Silos exist for a reason," says author Mohanbir Sawhney, who discusses an article he wrote for the current issue of the *Harvard Business Review*. A focus on presenting a unified corporate face may result in lost specialization on the back end, he warns. **» 39**

RISKY BUSINESS

In most corporations, taking risks is... well, too risky. But at Sun Labs, "if you aren't failing often enough, you aren't taking enough risks," says James Gosling, vice president and fellow at the company and the creator of the original Java programming language. **» 40**

MAKING THE LEAP TO LEADER

WANT TO BE A PROJECT MANAGER? Well, join the club. It's a logical step for people with technical know-how and an eye on a career in management. But getting there can be a challenge. Find out how two project leaders made their moves.

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SALOMI PATEL started as a programmer and worked her way up to a project manager position at McGraw Hill. "I got the technical skills so that I could one day manage technical people and projects," she says.





Online Grocer Webvan Crashes With a Thud

Business closes amid continuing losses

By Todd R. Weiss

After trying unsuccessfully for the past two years to make a business out of selling groceries online, Webvan Group Inc. last week closed its doors for good.

The Foster City, Calif.-based company announced that it's ending all operations, laying off about 2,000 workers and preparing to file for Chapter 11 bankruptcy protection. Webvan said it has no plans to re-open and will instead look to sell off its assets.

Robert Swan, the company's CEO, said in a statement that the closing was necessitated by continuing losses, a situation that was made more difficult by a steep drop-off in orders during the second quarter.

Webvan had "weathered nu-

merous challenges" and might have been able to survive if the economy and the venture financing climate were in better shape, Swan said.

"At the end of the day, however, the clock has run out on us," he said.

Webvan, which was founded in 1997, was operating most recently in Chicago; Los Angeles; Orange County, Calif.; Portland, Ore.; San Diego; San Francisco; and Seattle.

The company had also offered groceries via the Internet in the Dallas/Fort Worth area, but it closed that operation in February and laid off the 220 workers there in a bid to conserve capital and focus on profitability at its other markets. Webvan later discontinued service to customers in Atlanta and cut 885 more jobs as part of another reorganization that was announced in April.

Swan, who had been Webvan's chief operating officer,

replaced George Shaben as the company's CEO at the same time. Along with the restructuring moves, Webvan reported a first-quarter net loss of \$86.1 million on revenue of \$77.2 million and said it had about \$115 million in cash on hand. However, the company didn't expect to become profitable until the second half of next year.

In September, Webvan bought rival HomeGrocer.com Inc. in Kirkland, Wash., for \$1.2 billion in stock.

Any Noble, a spokeswoman for Webvan said the

company's strategy may have hurt it in the end.

"Certainly, in hindsight, no one knew what was going to happen in the marketplace," Noble said. "No one realized the amount of education it would take to get customers to change their buying habits" and shop online for groceries.

Webvan had plenty of company as a struggling online grocer. Skokie, Ill.-based rival Peapod Inc. had to turn to Netherlands-based majority owner Royal Ahold NV for a \$50 million credit line earlier this year and then quickly closed its San Francisco operations, redirecting its former customers in San Francisco to Webvan.

And last month, Pleasanton, Calif.-based grocery store chain Safeway Inc. temporarily suspended its GroceryWorks.com site while receiving Web site design help and new funding from U.K.-based counterpart Tesco PLC. (See related story on next page.)

Gene Alvarez, an analyst at Meta Group Inc. in Stamford, Conn., said the lack of such a business connection was a big contributor to Webvan's failure.

Webvan "took a substantial risk" in its strategy of rapid expansion in many markets across the nation, according to Whit Andrews, an analyst at Stamford, Conn.-based Gartner Inc. ▀

Goodbye, Grocer: The Rise and Fall of Webvan

1997	1999	September 2000	February 2001	April 2001	July 2001

KEVIN FOGARTY/BRICKS AND CLICKS

Better Part of Valor?

THE THING I'VE ALWAYS admired about some business folk is their ability to make a decision and stick to it without taking into account the personal consequences.

"I can make decisions very quickly," one high-tech executive told me eight or nine years ago. "I

don't require too much information to do it, either. I make the decision, and if it's wrong, I see that and I'm ready to change it."

I always thought that was pretty gutsy — damn the torpedoes, full speed ahead!

Of course, when Adm. Farragut actually damned the torpedoes, it was only 1864, and it was easy to balance the potential risk of floating faulty gunpowder bombs against the reward of

a major Union victory in Mobile Bay.

We're way ahead of that now. In the e-commerce world, we're at more of a World War II level of threat. Damn the torpedoes, and they'll take you to the bottom.

That's why it's still surprising that security still gets taken so lightly in the U.S. The FBI reports that 85% of corporations surveyed have some kind of security breach every year.

Those break-ins help the few security maniacs in every IT organization fuel a panic, but the panic always subsides before serious budget and planning decisions are made.

For example, Datamonitor estimates that major companies still spend less than 5% of their total IT budgets on security.

Of course, the FBI also says actual losses due to fraud and direct theft will be only about \$380 million this year. So paying for the losses must often be cheaper than

paying for the security to prevent them.

But that ignores the soft cost of the time security people spend applying patches, monitoring intrusion-detection systems and fixing servers or sites that get nailed.

It also ignores the increasing importance of e-commerce — whether that means consumer Web sites, automated supply chain connections to suppliers, or any other online connection to customers and business partners.

As you move forward with any form of online business, you become more exposed, both to routine hackers and the more serious corporate spies and saboteurs whose actions generally go undiscovered or unreported.

Security measures that may have been extraneous before aren't anymore. The risks you face have changed, and you can't stop them by just throwing money at product or services that claim they'll make you secure.

You have to think about what you want to protect, concentrate your resources there and then hide those assets and the defenses you've built around them. You must remain vigilant, even when nothing's happening.

You have to know how to defend against an attack and collect evidence, and be willing to go public and prosecute in court.

We're no longer in the experimental era of online crime. The bad guys are serious and skilled, and gutsy decisions will only leave you vulnerable. Precautions pay off, especially if you want to damn the torpedoes, and not the other way around. ▀



Learning to Synchronize Your Organization the Right Way

In their rush to present a unified corporate face to the customer, some companies may be taking the wrong approach, says **Mohamed Sawhney**, the McCormick Tribune professor of e-commerce and technology at Northwestern University's Kellogg Graduate School of Management in Evanston, Ill. In a recent interview with *Computerworld's* Kathleen Melnyk, Sawhney talked about an article he wrote for the current issue of *Harvard Business Review* in which he proposed a better way to "hot-sync" your organization.

doesn't know what its right hand is doing.

Q: How can you synchronize a company?

A: Resist the temptation to solve this with a blunt instrument by unifying all corporate information into one giant database and totally standardizing and homogenizing practices.

Silos exist for a reason. You need them for functional and product excellence. If you become focused totally on presenting one face to the customer and meld it all together, you start to lose that specialization at the back end that allows you to compete effectively in the long run.

Q: What's the alternative?

A: You can have your cake and eat it too. Through a combination of redesigning the IT infrastructure, the customer interface and the organization, you can get the benefits of presenting one face to the customer while still preserving product organizations in the back end of the company so you still have functional excellence and product excellence. You don't have to destroy silos; you can create virtual seamlessness.

Q: How does this affect your IT infrastructure?

A: In the traditional, vertically integrated IT infrastructure, the applications are stovepipes from the front end to the back end, and it becomes very difficult to deploy new technology or reconfigure technology based on customer problems. The fundamental shift is from a vertical to a tiered architecture, with the introduction of middleware that allows you to decouple the back end from the front-end customer interface.

Q: What's the hardest part of getting synchronized, in terms of IT?

A: The big challenge is to be able to drive standards for some

back-end infrastructure across a complex, multidivisional organization. At American International Group Inc., for example, there were 600 people operating 220 Web sites in 120 countries using 80 languages.

How do you drive standardization of that back-end infrastructure? But you need to get all of them to buy in, because you are creating members of a centralized organization at the organization end, which



SAWNEY: "You can create virtual seamlessness."

allows you to decentralize at the customer interface. That's the paradox.

Q: Are there any companies that hot-sync today?

A: A number of companies — HP, 3M, Motorola — are in various stages of this transition. I don't mean to give the impression that this is easy. It requires tens of millions [of dollars] in investment and strong commitment by leadership.

Safeway Turns to British Counterpart for Online Help

Chain trying to invigorate Web site

BY TONY R. WILSON

U.S. grocery store chain Safeway Inc. is attempting to breathe new life into its GroceryWorks.com online shopping affiliate by seeking new funding plus Web site design assistance and other IT-related help from British counterpart Tesco PLC.

Pleasanton, Calif.-based Safeway last month temporarily suspended operations at its GroceryWorks.com site so it could try to learn how London-based Tesco built its online grocery business into a commercial success in the U.K. Safeway said it wants to make those lessons and revitalize Dallas-based GroceryWorks, which it teamed up with and invested in early last year.

Safeway spokeswoman Debra Lambert said a key lesson that the \$32 billion company has already learned from Tesco is that an online grocer has to combine brick-and-mortar stores with a Web site and avoid costly warehouses in

order to be successful.

"We feel the best approach is online and brick-and-mortar, not pure-plays," she said.

The online unit, which currently operates only in Texas, will start filling orders from local Safeway stores instead of from warehouses when it opens, matching the approach used by Tesco. A recent data hasn't been set.

Russell Craig, a Tesco.com spokesman, said filling online orders directly out of a local store instead of from a warehouse results in faster service for customers and reduced costs for the company.

Tesco has approximately 1 million registered online shoppers who place orders averaging \$133 every week or two, he noted.

The alliance with Tesco is meant to provide GroceryWorks with help in all aspects of the online grocery business, from designing the Web site to setting up the system needed

Q: What do you have to watch out for?

A: This is like a three-legged stool. You have to have all three legs, or you fall. If you redesign your offerings to present a single face to the customer and put up one Web site, unless your back end is unified, you really can't deliver because different parts of the organization don't talk to each other.

If you build a decoupled infrastructure but don't redo how you go to market, you're not going to be able to leverage the technology investment. If you do both but don't change the way the organization works, the salespeople won't buy in. It's a systemic process. ■

to run a store-based shopping service, Lambert said. Tesco's online experience will be combined with the procurement power and market presence of Safeway's 1,500 U.S. stores, she added.

As part of the deal, Tesco will also invest \$22 million in GroceryWorks and provide intellectual property and technical resources in return for 35% of the online venture's voting stock. Tesco's investment is part of a total cash infusion of \$35 million that GroceryWorks is receiving, the companies said.

Safeway owns about 50% of the voting equity in GroceryWorks, and the remaining 15% is held by other shareholders.

In a related matter, Safeway said it plans to record an "impairment charge" of about \$30 million in the second quarter, in connection with its investment in GroceryWorks.

Gene Alvarez, an analyst at Meta Group Inc. in Stamford, Conn., said the agreement with Tesco should be good news for both Safeway and GroceryWorks.

Tesco does bring a wealth of online grocery experience, Alvarez said. ■

JUST THE FACTS Rescue By Tesco

Tesco will provide Safeway with:

- Web site design assistance
- IT and e-commerce consulting
- \$22 million in capital

WORKSTYLES

At Sun Labs, if You're Not Failing, You're Not Doing Your Job

Interviewer: James Gosling, vice president and fellow, he crafted the original design of the Java programming language 10 years ago.
Company: Sun Microsystems Laboratories.
Main location: Palo Alto, Calif.

What's it like to work at Sun Labs? "For the last year, I've been in the research lab. It's pretty entertaining. The goal of any research lab is to do things that are kind of weird and outlandish and risky. In most IT organizations, the goal is to succeed, which means, 'Don't take risks.' But in a research lab, if you aren't failing often enough, you aren't taking enough risks."

Dress code: "Casual. I typically wear T-shirts and blue jeans and Birkenstocks."

Annual reviews: "Technically, I'm supposed to get one, but I haven't had one in so long. I don't know what they look like."

Bonus program: "Yes. But [I] don't know about this year."

Food perks: "We get coffee and tea and that kind of stuff. We turned off the free lunches. Look at the stock market. Like every other company, we've been doing everything we can to be cost-conscious. And so a number of the things we used to do all the time... have kind of gone away."

What type of office do you work in? "Shootout. Four walls."

What do you keep on your desk? "All kinds of bits of paper, a pile of assorted toys, but mostly it's a monitor and a keyboard."

When are you under pressure to get things out? "The research lab typically doesn't do product releases, so we don't typically have the same types of deadlines as other parts of the company. The research lab tends to be more mellow. But

for anyone involved in JavaOne, it's a pretty much over-the-top scramble time."

In Sun using new development techniques such as Extreme Programming (XP), which pairs two programmers to work side-by-side or lightweight coding methods (where programs are kept to their simplest functional parts)?

A: "We use some parts of [both]. XP has a lot of focus on testing, and we certainly have that religion big time. The pair programming thing, I don't know that people [at Sun] would do it. I know, at some of the people I know, it gives them the creeps."

Most people carry beepers? Cell phones? "An awful lot do, but less now. I used to carry a pager, but I don't carry a pager anymore. It's kind of a wardrobe thing... I don't wear a pager that I could put in, and I don't have a beeper to put anything in."

"Whatever I carry, it has to fit into the pocket into my blue jeans. I'll find a Palm Pilot or a BlackBerry, experience says that within a week, it's either lost or destroyed. There's nothing like putting a Palm Pilot in your pocket and sitting on it. But that said, have a budget for one thing: a cell phone that works as a pager."

Would you feel comfortable e-mailing the CEO of Sun, Scott McNealy? "Oh yeah. John Gage [chief researcher and director of Sun's Systems Office] came up with this great quote to describe how Sun works, which is, 'Sun doesn't have an e-mailer; it has e-mail.' Scott gets e-mail from people all the way up and down the chain - everywhere. And often, it's the general systems from people down in the trenches that get the most action."

-Lee Copeland

PETER G.W. KEEN

Integrate for Wireless

INFORMATION TECHNOLOGY follows a consistent pattern: Each breakthrough in technology brings new functionality first and integration costs later. The breakthroughs create new users and uses, stimulate innovation and make IT an increasingly powerful business and organizational resource. But every surge of new applications is followed by a decade of trying

to fit the IT pieces together. The result is more and more middleware, never-ending investments in enterprise application integration, a burden of legacy systems and related costs of dealing with incompatible systems.

Innovations such as minicomputers and office automation systems in the 1970s, PCs and LANs in the 1980s, Web sites in the 1990s and wireless tools today began as new capabilities that were independent of the established IT enterprise resource. As long as these tools remained personal, local and limited to just a few applications, everyone benefited. But that changed when users of the "personal" computer needed access to enterprise data, when "local-area" networks needed to connect to wide-area networks and when Web "sites" had to link to legacy systems. IT then had to move from the sidelines to the center, often in a defensive mode, to fix problems of systems disintegration at a great expense and with no apparent benefit to many users who were personally satisfied with the tools and saw no value in "standard" architectures.

Mobile-commerce will compound the problem. PDAs such as the PalmPilot, Web-enabled phones, wireless laptops and BlackBerry devices are repeating what happened with the PC, except in far larger numbers. The functionality that, say, Palms with wireless communication links offer to sales reps in the field is immense, and there's no reason to discourage their use. Synchronizing those Palms with users' desktop data adds even more personal functionality but opens up all the old PC problems: virus protection, security, directory management, operating system incompatibilities, proprietary applications and even ownership. Often, the Palm is bought by the individual and isn't part of the enterprise IT inventory. It's literally "personal" and, to its owner, none of IT's business.

Wireless is the future of IT, and much of the future is now. Even with today's limitations of wireless speed, quality of service and reliability, m-commerce applications are everywhere. In researching our soon-to-be-released book, *The Freedom Economy: Gaining the M-Commerce Edge in the Era of the Wireless Internet*, co-author Ron Mackintosh and I found hundreds of examples in sales force automation, customer service, emergency police and fire services, education, health care, warehouse management, shipping and many other uses. By the end of next year, wireless will be the mainstream of IT use. For example, just about every mobile phone will have Web capabilities and every laptop will come with a wireless option.

How does IT help the enterprise leverage all this innovation and, instead of repeating the historical pattern of functionality vs. integration, gain the architecture advantage of functionality plus integration? Going on and on about architecture and standards won't help; it largely hasn't done so to date. And any IT effort to regulate PDA and mobile phone usage is, at best, a quixotic ambition. The most promising

way of getting across the message of integration without talking about it in terms of architecture and standards comes from Mackintosh's firm, Differents: the concept of the joined-up business (JUB).

This is the long-term target for every element of process design, customer relationships, logistics and supply chain, organizational coordination and knowledge management. If the JUB is the goal, then we can shift the IT argument from where functionality precedes integration to where functionality must come with integration. If IT doesn't get that business point across now, then wireless will be an enterprise burden, no matter how much local and personal value it provides.

Get the message out fast! ■



PETER G.W. KEEN
(center-left photo) is chairman of Keen Innovations (formerly The International Center for Information Technology) in Fairfax Station, Va., a senior fellow of Differents, a European business-to-business consultancy, and a distinguished visiting professor at the University of Delft in the Netherlands.

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THINK YOU'VE GOT WHAT it takes to be a successful project manager? Apparently so does about half the IT world.

Granted, technical recruiters and industry associations say the demand for project managers is surging. But so is interest in the position. The Project Management Institute Inc. in Newtown Square, Pa., reports that there are currently 27,000 certified project management professionals in 26 countries.

It really should come as no surprise. The job of project manager is a natural steppingstone for people with technical experience and an eye on a management career. And at most companies, the pay isn't too shabby. Project managers can earn approximately \$100,000 a year, on average, and more, depending on the scope and length of their experience.

How do you really know if you have what it takes to be a project manager? And how can you persuade your boss to give you a shot at the job? Consider the examples of how the following two project managers made their move.

Saloni Patel
Project manager
The McGraw-Hill Cos.
Hightstown, N.J.

When Saloni Patel joined New York-based McGraw-Hill in May last year as a programmer, she already had several years of work experience and an undergraduate degree in computer science. Because her goal was to move

into management, Patel enrolled in the part-time MBA program with a concentration in MIS and e-commerce at nearby Rutgers University.

"I told my boss that I didn't want to be a programmer for a long time — I wanted to be a project manager," says Patel. "I got the technical skills so that I could one day manage technical people and projects."

Within six months, her wish was granted. Patel's boss, Corri Russell, a manager at McGraw-Hill's Construction Information Group, was planning to take maternity leave and needed someone to take on project management duties while she was out of the office.

The group was rewriting an application that collects information for the Construction Group and puts it up on the Web. Russell asked Patel to lead the project.

"Saloni has all the qualities you would look for in a project manager," explains Russell. "She has a technical background, shows a lot of initiative

and is quick to learn. As a programmer, she had taken on a leadership role in her project — even before expressing her interest in becoming a project manager."

Patel says her graduate work has been helpful in preparing her to meet the demands of the project manager's role. But the day-to-day experience of doing the job is what has sharpened her skills.

"When I was a programmer, I tried to think like a project manager," Patel says. "I didn't only focus on the module I was coding — I tried to learn about the entire project from a business point of view."

Once she was promoted to project manager, Patel discovered unexpected challenges.

"I had to learn how to communicate with team members," she says. "If they were not performing up to expectations, I realized that I couldn't be blunt. I had to find a better way to give them the message. It was hard in the beginning, but I learned how to be po-

Project managers are in high demand. But IT pros know it, and the competition is getting stronger. Here's a look at the skills and qualities that will help you get an edge. By Jill Vitiello

Fast Track into Management

live and demanding at the same time."

At Russell's suggestion, Patel attended a McGraw-Hill workshop called "Managing Projects for Success." In the three-day course, she says, she "learned about the project life cycle and how projects should be executed at McGraw-Hill." The training provided company-specific templates and processes and gave Patel the chance to "build a network of project managers from other departments," she says.

Patel found the experience so helpful, she returned for more company-sponsored training for project managers in business writing. In the fall, she plans to take the McGraw-Hill workshop on business communication.

With her skills as a project manager, and an MBA with a concentration in MIS, Patel is aiming for a career in technical management.

"Things are working out the way I hoped they would," she says. "Eventu-

ally, I want to take on more senior level management positions within [IT]."

Bill Matasker
Project manager
Verizon Network Integration
Edison, N.J.

In his work as a network engineer at Verizon Communications, Bill Matasker gradually began to take on project management responsibilities because there weren't enough project managers to handle the workload. Verizon had just launched a massive project called Access New Jersey, in which the company provides free telecommunications equipment to connect the state's public schools and libraries to the Internet.

Matasker says he found that he enjoyed "seeing a project go from a piece of paper to a working network." When a project manager slot opened up, he offered to fill it and got the job.

"The director of operations knew my technical background and had seen the work I'd done on some of the complex accounts," says Matasker. "He thought I would be a good fit."

Matasker started by managing smaller projects for approximately the first month.

"That's the ideal way to start as a project manager," says Matasker. "You can get your feet wet without the responsibility of a million-dollar account. But that period doesn't last long. When the job load increases, then it's a baptism by fire."

Matasker has remained relatively unschooled in his two years as a project manager, even while simultaneously overseeing dozens of projects valued in the millions of dollars. He says he did it "with some luck, but mostly dealing with the inevitable unforeseen problems as soon as they arise and keeping in mind that the resolutions should always be win-win for the customer and for your own company."

Along the way, Matasker says, he's picked up some other "fire-protection" pointers.

"Never lie about the project status," he advises. "There is no reason to lie. Time runs out. Resources change. If you are doing everything you can to the best of your ability, there is nothing more you can do. The customer may get upset over the truth, but if you lie, you're screwed."

Matasker says he also believes that successful project managers must approach each team member with an understanding of that individual's unique situation. "You have to understand where each person is coming from and what he or she hopes to get out of being involved in the project," he says.

"A lot of project management is common sense — communication and organization skills you acquire just by living and learning from your mistakes," says Matasker.

The ability to listen is one of the most important skills a project manager can have, he adds. And it's one of the hardest skills to master.

According to Matasker, one of the most rewarding aspects of being a project manager is gaining the confidence of colleagues and higher-ups.

"When you hear through the grapevine that people believe a project will run smoothly because you are the [project manager] on the job, it gives you a great feeling of satisfaction," says Matasker. ▀

Viriello is a freelance writer in East Brunswick, N.J.

Project Management Skills Checklist

If you think all there is to do project management is writing a to-do list or a memo at the lunch table, you're about two decades behind the times.

So says Paul J. Rutkowski, project management professional, senior manager and project/program management curriculum specialist at Lucent Technologies Inc.'s Corporate Learning & Performance Center in Naperville, Ill., and a director-at-large at the Project Management Institute.

"Today, projects are much more global and complex," Rutkowski says. "Customers are demanding speed to market because a project's timing affects business operations. They require flawless execution to realize business opportunities. Effective project management is the way to make it happen."

Rutkowski says the project manager has an "onemane role." Some of the skills project managers need to succeed include the following:

▀ **Leadership:** the ability to create a vision and inspire a team to achieve project goals successfully.

▀ **Communications:** with the project team, customers, project sponsors, vendors and others. Rutkowski estimates that more than 80% of the project manager's time is spent using this skill.

▀ **Conflict resolution:** making sure that nobody feels outcasted or less a part of the team, no matter what the final decision.

▀ **Negotiation:** understanding how to leverage vendor participation and build relationships with people whom the project affects.

▀ **Team building:** once the project team is assembled, team members need to understand their roles and responsibilities to work together effectively.

▀ **Listening skills:** not having a predisposed notion, but truly listening to team members, customers and managers.

▀ **Relationship management:** among various constituents at all levels of the organizations involved.

—Jill Vitti



Price-to-Earnings Ratio

DEFINITION

The price of a stock, divided by its earnings per share. P/E is a common way to gauge the value of a company.

BY MARY M. PRATT

GRAHAM AND Dodd's investment bible, *Security Analysis*, stressed the importance of the price-to-earnings (P/E) ratio when it was first published in 1934. The book called P/E "a concept that the working analyst will have to deal with extensively."

At first glance, the ratio seems relatively simple: The price of a stock, divided by its earnings per common share.

But P/E is more complicated than that. How it's calculated can vary, and the weight it's given can also change. And not long ago, some market gurus even questioned its merit in determining a company's value in the New Economy.

But the dot-com bust has since brought P/E back to the forefront, and experts say the calculation still serves as a crucial tool for smart investing.

"This ratio has been around for decades. It's always been important," says Ray Martin, president of CitiStreet Advisors LLP in Quincy, Mass. "But with the fallout of the dot-com stocks that had no earnings, they've placing as much emphasis as they ever had on P/E ratios."

Calculating P/E ratios is straightforward. If a company's stock sells for \$10 with \$5 earnings per common share, the P/E ratio is 2. There's a hitch, though: Not everyone uses the same definition of earnings.

"It's profits, but it's not so easy to define profits," says Robert J. Shiller, an economics professor at Yale University in New Haven, Conn., and the author of *Irrational Exuberance* (Princeton University Press, 2000). "Accountants have been debating that for 100 years."

Analysts sometimes apply earnings from the previous year or next year's estimated earnings to calculate a P/E ratio. They might use the last quarter's earnings multiplied by four, or apply earnings that are calculated before interest, taxes, depreciation or amortization.

The most traditional approach is to use trailing 12-month earnings, as reported by companies.

"We just found that trailing four-quarter earnings is more reliable," says Kari Boyer, a

quantitative strategist at Merrill Lynch & Co. in New York.

Still, not everyone favors using past earnings, says Kei Kian-poor, CEO of New York-based Investors.com, which provides peer-group analysis tools for the investment community. "Looking at historical earnings and taking that P/E, you would have a safer bet," he says.

But what if that company doesn't expect any earnings in the upcoming year? "I think estimated future earnings are much better, but you need excellent projections," he adds. Obviously, past earnings can't be applied to start-ups, either.

"The price-to-earnings ratio wasn't even calculable [for new companies], because they didn't have any earnings," says Richard DeKaser, chief economist at National City Corp. in Cleveland.

Nevertheless, knowing a company's P/E ratio doesn't necessarily mean much. A more important gauge of a company's financial health is "how does it compare to stocks in its peer group?" Martin says.

Take the stock of two financial services firms, for example. One might sell for about

\$20, the other for about \$50. The \$20 stock on face value might be cheaper, but let's assume that it has a significantly higher P/E. The better value would be the \$50 stock, Martin explains.

"It's like going to the grocery store and unit pricing," he says. It's similar to paying \$4 for 48 ounces of orange juice vs. \$3 for 24 ounces.

Despite the market's volatility, it does follow some P/E trends. For example, more mature industries, such as the au-

tomotive sector, tend to have lower P/E ratios because they're not expected to grow as quickly as newer industries, such as the software sector. "The higher the number, the greater the optimism that investors are attaching to its future income stream," DeKaser says. There's also more risk attached to the stock.

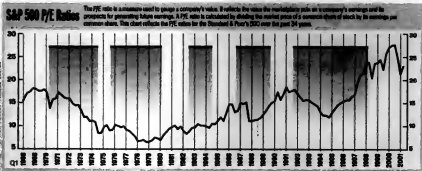
Another evolving trend is the steep rise in the stock market's overall P/E ratio. Although the historical average is approximately 13 or 14, P/E ratios for the Standard & Poor's 500 reached the low 30s in late 1999 and early 2000 (see chart) — a startlingly high figure that DeKaser calls "unprecedented."

And don't expect the market's ratio to tumble with the economy. That's because the market's P/E historically goes up during an economic downturn, experts say. "It's not because the price of stocks generally goes up. On the contrary, it's because earnings get depressed and fall," explains DeKaser.

The higher the number, the greater the optimism investors are attaching to its future income stream.

RICHARD DEKASER, CHIEF ECONOMIST, NATIONAL CITY CORP.

Pratt is a freelance writer in Waltham, Mass. Contact her at markmary@mindspring.com.



JOE AUER/DRIVING THE DEAL

Gain an Edge From Vendor Presentations

NEGOTIATING A BETTER DEAL is an ongoing process, not an isolated event. One of the steps you can use to turn the process to your advantage is to get a vendor presentation. Savvy IT managers usually require vendors to make presentations of their proposed solutions. A vendor presentation can be an excellent opportunity to gain concessions well before the formal face-to-face bargaining starts.

Here's how: Make it very clear to the potential suppliers that to remain in competition for your business, they must formally present substantive recommendations that prove that they understand your requirements. Also, they must show that they have confidence in their ability to perform and deliver a solution that meets or exceeds your stated requirements. At this point, you are in a position of strength, because a given vendor has yet to win the deal, and vendors will tend to maximize their representations of benefits to you.

To your advantage, vendors will usually make assertions during their presentations to convince you of their capabilities

and ability to deliver. Take good notes on who says what.

For example, a vendor once told me during his presentation that "satisfaction is guaranteed." Later, during face-to-face negotiations, we pressed for a "satisfaction guarantee or our money back" warranty, citing the promise made (and by whom) during the vendor's presentation. The vendor was in the unenviable position of having to make good on that promise or lose face and credibility by renegeing.

Vendors that are still in their sales mode during presentations tend to embellish their qualifications while sometimes forgetting that negotiations are proceeding. This gives you a great opportunity

to position yourself for valuable concessions.

But at this critical juncture, it's also easy to lose your negotiating leverage. If your team gets noticeably excited about a vendor's offering, the vendor will think it has the deal in the bag and become less inclined to offer more assurances or indulgences to win your business.

Remember that vendor representatives are trained in every aspect of account control. They'll pick up on signs of an excited customer and change their stance accordingly by reinforcing a customer's hot buttons while deflecting attention from any areas where their company's offering is weak.

The key to successfully using a vendor presentation for leverage is to become a sponger and soak up information, ask probing questions, verify the answers provided in the vendor's proposal and never show a lot of enthusiasm for a deal.

Vendor presentations may seem mundane (and in IT deals, very technical), but they create equal opportunities to either improve or erode your position. Remember that the vendor is still basically selling while you're actually negotiating, and that creates a great opportunity to turn some sales promises into contract realities.

Avoid Attractive Lease Packaging

Translating a package of prices into "one low monthly payment" is a favorite ploy of many technology equipment vendors. Car dealers have used it for decades on eager, naive customers.

In either setting, if the salesperson can get a customer to focus on an all-

inclusive low monthly price (magically within the customer's budget), there's a good chance he can land the deal quickly without much analysis by the customer.

For lessors, the first step is to separate the equipment price from the financing. Focusing on the all-inclusive lease quote — instead of optimizing each part by negotiating a purchase and separately negotiating financing arrangements — can be costly. Under the package price, you don't know what the true cost of the equipment is. Second, you don't know the true financing cost. Third, you can't make a fact-based decision about

whether purchasing or leasing gets you the better deal.

Attractive lease packaging can be very expensive. Break the deal apart, negotiate each part and line item, and then assemble the negotiated parts. You'll find that the sum of the parts will total a lot less than the original lease package price. ▀



JOE AUER is president of International Computer Associates Inc. (www.icausa.com), a consultancy that educates users on high-level procurement. ICAI sponsors CAUCUS, The Association of High Tech Acquisition Professionals. Contact him at jauer@icausa.com.

BRIEFS

GMAC Mortgage to Roll Out New HR System

GMAC Commercial Mortgage Corp. next month plans to roll out Waltham, Mass.-based Authoria Inc.'s HR 3.0 system for use by its 1,800 U.S. employees. The company plans to use the application to streamline its human resources processes, said Andrea Daughlin, GMAC's HRIS/benefits manager.

The Limits of Wireless

Although the U.S. has had the largest base of cell phone users in

the world, less than \$4 billion dollars in shipping and travel will be transacted on Internet-capable mobile phones in 2000, representing less than 2% of all online shopping, according to a new report by New York-based Jupiter Media Matrix Inc. The report stated that only 7% of consumers want to actually make purchases with a mobile phone. Therefore, Jupiter analysts predict that wireless projections that can overcome the reluctance of online shoppers will be the key to the mobile commerce strategies that are the most successful.

Printing Firms Merge

Online e-printing vendor Print Technologies Inc. is merging with promotional firm printer Wood

Associates Inc., whose customers include AOL Time Warner Inc., BP PLC and Compaq Computer Corp. The deal brings together the printing technologies of Metro Park, Calif.-based Print with the wide customer base of Santa Clara, Calif.-based Wood Associates. The all-stock deal is expected to close in the fourth quarter, with Wood Associates becoming a wholly owned subsidiary of Print.

Post Turns to New Purchasing Software

The Washington Post Co. announced it will be purchasing payment processing software from Holland, Mich.-based Integrated Systems Development Inc. (ISI). The

newspaper plans to use ISI's Money Sentry software to process any payment type or transaction authorization across all business units, including Web commerce.

Sara Lee Taps ICB

Chicago-based Sara Lee Corp. recently selected ICB Commerce to deliver comprehensive e-procurement services to three of its European divisions: Sara Lee/Dorcas Egarth, Sara Lee/Mo and Sara Lee Branded Apparel. Under the deal, the St. Louis, Mo.-based ICB Commerce will advise Sara Lee divisions to aggregate purchasing with other European companies and get the best pricing across the U.K., the Netherlands, Belgium, France, Germany and Spain. ICB Commerce, a

procurement services provider, is a unit of Internet Capital Group Inc.

XML Gains Steam

More than 70% of companies surveyed recently by Cutter Consortium in Arlington, Mass., are using XML, and 25% of those are using it in a major project. Of the 272 companies surveyed, 33% said they are studying XML, half said they have used or are using XML in a project, and 17% said they are committed to extensive use of the language. The study concluded that smaller companies are more likely to use XML in a test project and that larger firms are more likely to use it for a major project. When asked about their level of satisfaction with XML, 77% responded positively.

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TECHNOLOGY

RENEWED FOCUS ON EFFICIENCY

IN THE SLOWED ECONOMY, companies are looking to manufacturing execution systems (MES) in hopes of increasing efficiency. Concepts like just-in-time manufacturing, build-to-order and end-to-end supply chain visibility, combined with an explosion in contract manufacturing, have revolutionized plant management. MES gives manufacturers the flexibility and tight control they need, but the price tag is steep.

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SECURITY JOURNAL

As his new employer moves from managed services, security manager Mathias Thurman finds himself building the firm's basic security infrastructure, writing new security policies and creating a virtual private network. » 48

FUTURE WATCH

Internet technology designed for astronomical distances may one day support communications among spaceships, robots and manned and unmanned outposts in the solar system. But it could also help terrestrial users, especially in mobile applications. » 50

EFFECTIVE E-LEARNING

E-learning is a logical extension of existing training programs. But whether they outsource the apps or build them in-house, IT managers face integration issues, aggravated by a lack of standards, that can overwhelm cost savings, practitioners say. » 52

JOB WATCH

Technology workers are being laid off from dot-coms in large numbers. Are these workers the right fit for corporate IT jobs? Computerworld's Julekha Dash asked two technical recruiters for their views. » 58



Big Firm's Security Gets Large-Scale Overhaul

As his new employer moves away from managed services, Mathias must begin with security basics

BY MATHIAS THURMAN

UNTIL NOW, I've always worked at dot-coms and small start-ups. Now, I've taken a position at an established company that has been around for more than 40 years. You'd think that we would have our act together when it comes to security, but that's not the case—yet.

My new employer is a Fortune 1,000 company. For many years, it relied on mainframes with dumb terminals at each desktop. A few years ago, the company began using Windows NT desktop PCs and servers. The firm didn't have an in-house IT staff when it made this decision, so it outsourced the whole infrastructure to a consulting organization that has since been acquired by a very large, respected competitor.

The problem with outsourcing almost all of our critical IT and operational infrastructure is that although we may actually own the resources (we bought the hardware and software), we've had no infrastructure in place for administering and maintaining it. Now, several years after the initial PC rollout, our new CIO wants our operation to be totally self-sufficient and to get away from the managed-service business model.

That's where I fit in. The average employee tenure here is 15 years, vs. about 1.5 years at a dot-com. This means that there isn't too much diversity with regard to in-house talent. In contrast, I've held four different positions during the past six years.

Although some might think that as a sign of instability, my employer sees it as a benefit. I've been exposed to different cultures, personalities, business models, techniques and technologies.

When it comes to security services and products, I generally know what works and what doesn't. I bring my experiences with me, so my current employer reaps the benefits.

There's a lot of work to be done. My new company has no security standards to speak of, and the existing security policies consist of an outdated boilerplate document. If the policies aren't meaningful or if they're vague, they'll end up in a three-ring binder on a shelf until the next audit.

There's no clear understanding of who can access what. And we have no network diagrams, so I have no insight into the logical layout of the network. Without those diagrams, the all-important (but nonexistent) Windows NT Server trust relationships can't easily be determined. We also have no standard baseline desktop PC image, so there's no consistency in the desktop or critical server operating system deployments.

Yes, it's surprising that a well-respected consulting organization didn't handle things better. I imagine that part of the problem stems from its acquisition by a larger competitor.

However, I had a chance to talk to the security representatives from the new organization, and they seem to be competent and on the same page as us regarding what needs to be done to make this environment more secure.

To make matters worse, today I discovered our Windows NT desktops are still running Service Pack 4! I know that even though my responsibilities are supposed to be focused on architecture, I'll have a significant input into the other aspects of information security. My boss comes from a Big Five consulting background, and we generally agree about what needs to be done.

I'm starting by helping to establish a data-transfer policy and by setting some standards. The company has been transferring customer data to third parties over the Internet without encrypting files or using a secure transport mechanism such as a virtual private network (VPN) or encrypted file transfer protocol session.

I've begun writing the data-transfer policy and chose Santa Clara, Calif.-based Network Associates Inc.'s PGP as our encryption standard. PGP is becoming more popular, and many vendors are including plug-ins in compatibility with this technology. The vendor's E-Business Server lets users encrypt files by either using public-key encryption or creating a self-decrypting archive.

The policy I'm writing simply states that any sensitive data leaving the company must be encrypted. I'll also include details regarding levels of sensitivity and key lengths.

VPN Choices

Next up is the VPN issue. For years, my company has been spending thousands of dollars per person for a toll-free number and metered dial-up service that terminates in our data center. We're being charged by the minute for usage. With many people using the lines, the charges accrue easily into many hundreds of thousands of dollars—perhaps more. A VPN will let people connect securely through the public internet by making a local phone call and will save a large amount of money in a very short time.

To set this up, I need a VPN gateway and client software to communicate with the gateway so that the encrypted tunnel can be established and Internet Protocol traffic can flow. I also have training, compatibility, performance, support and maintenance issues to deal with, and those aren't trivial. But the basic architecture isn't brain surgery.

My company has decided to use a Convinty VPN switch from Brampton, Ontario-based Nortel Networks Corp. I'm a die-hard fan of Check Point Software Technologies Ltd., however. Perhaps I should try to sway management to consider Check Point's VPN-1 sys-

THIS WEEK'S GLOSSARY

Self-decrypting archives (SDA):

SDAs are similar to self-encrypting archive files in that the recipient can't need special software installed on their computers to decrypt the file. The sender simply creates the encrypted archive using a session key and chooses a passphrase. The recipient encloses the file and must enter the same passphrase to view the file.

Public-key infrastructure (PKI):

This encryption methodology requires that both parties create both public and private cryptographic key pairs. The encryption keys are public, but only the holder of the decryption key can read the messages.

LINKS:

<http://madsa.mca.com/secure/>

<http://www.microsoft.com/secure/> Visit this Microsoft Corp. site for a detailed explanation of public- and private-key pairs.

www.pgpcorp.com/products/ www.pgpcorp.com/products/secure/secure.asp If you're interested in experimenting with public- and private-key technologies, you can download a copy of Network Associates' PGP software for free, but only if it's for personal use.

www.checkpoint.com/products/vpn/vpn/index.html Check Point's Web site includes information about its VPN-1 product line.

www.nortelnetworks.com/products/Security/Products/VPN/VPN.html Visit Nortel's site for information about the vendor's Convinty VPN switch.

tem. The Israel-based firm makes a great product, and I'm familiar with it. But then, I have heard some good things about the Nortel product. Should I broaden my horizons and go with Convinty?

Perhaps readers can help me out by sharing their experiences in the Security Manager's Journal forum. ■

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radio show host

Author: Christopher W. Watson and Thomas H. Davenport

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COMPUTERWORLD

Internet To Mars

Internet technology designed for astronomical distances could help terrestrial users as well. By Gary H. Anthes

THE MINING OF asteroids, space-based hotels, zero-gravity manufacturing and medicine — they're all part of the future commercialization of space, according to a joint government and industry group that's developing the InterPlanetary (IPN) Internet.

Starting this year, with NASA funding, the IPN will roll out in pieces over the next several decades to support communications among spaceships, robots and manned and unmanned outposts in the solar system.

"It's conceivable that the IPN could go like its terrestrial counterpart, starting out as a network supporting scientific research and eventually evolving into something of commercial interest," says Vinton Cerf, senior vice president of Internet architecture and technology at WorldCom Inc.

Cerf co-invented TCP/IP in 1973 and is often called a "father of the Internet." He got the idea for an interplanetary extension of the Internet in 1997 and is now working with engineers at NASA's Jet Propulsion Laboratory (JPL) in Pasadena, Calif., to make it real.

"I started thinking about the past 25 years as the Internet evolved, and I thought, 'Gee, what should we be doing now so that in another 25 years, we are ready for whatever's coming?'" Cerf explained.

The protocols, software and hardware developed for the IPN will benefit terrestrial internet users, especially in mobile applications, Cerf says. Protocols like TCP are unat-

tractive for use in space because they're "chatty" — they depend on near-real-time exchanges between communicating parties. But a message can take 40 minutes to travel between Mars and Earth. The large distances also limit bandwidth and introduce high error rates.

"Size, weight and, most of all, power are supreme challenges for space-based communication systems, as they are for ground-based mobile systems," said the NASA-led IPN Research Group in a paper published in May.

Cerf says the IPN will be a "network of networks," in which ordinary internets are interconnected by a store-and-forward "overlay" network that forms a backbone across interplanetary space. Each internet's protocols will be terminated at its local gateway, and a new "long-haul transport" protocol will communicate between gateways. A new, end-to-end "bundle" protocol will operate above the transport layer to

carry information from a gateway on Earth to one on Mars, for example.

Bundling is intended to eliminate the chattiness of local protocols. For example, a file-transfer request bundle might compress a user's password, the location of the file to retrieve and the address to which it is to be delivered.

These concepts may have applications on Earth as the terrestrial Internet becomes increasingly balkanized, says Scott Burleigh, a senior software engineer at the JPL.

Firewalls and network address translation boxes that sit between the Internet and corporate intranets, along with the proliferation of intermittently connected mobile devices, are introducing some of the challenges of communicating in space, he says. ▀



VINTON CERF: The IPN will be a "network of networks."

Disorder at Interplanetary Networking

Go thoughtfully in the knowledge that all interplanetary communications derive from the modulation of radiated energy, and sometimes a parcel will be between the source and the destination. Therefore, rely not on end-to-end connectivity at any time, for the universe does not work that way.

Neither rely on angle bandwidth, for power is scarce out there and the bit error rates are high. Know, too, that signal strength decays off by the square of the distance, and there is a lot of distance.

Consider the preciousness of interplanetary communications links and restrict access to them with all your heart. Protect also the confidentiality of application data or risk losing your customers.

Therefore be at peace with physics, and expect not to manage the network in closed control loops. Each node must make its own operating choices in its own understanding, for all the others are too far away to ask. Truly, the solar system is a large place and much of us is on this or that one. Deal with it.

— Scott Burleigh, senior software engineer, NASA's Jet Propulsion Laboratory

InterPlanetary (IPN) Internet Architecture

The IPN backbone will connect ordinary Internets on Earth, Mars and spacecraft. The Mars Network, part of the IPN, will link six satellites, surface rovers and manned stations.



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CHET ZOLTAK HAS HEARD THE arguments for implementing an e-learning system as a cost-saving measure and agrees there are monetary advantages to delivering training online. But the more important consideration is the learners themselves, he says.

"Our primary driver in implementing e-learning is to get out of the way of people learning. We wanted to avoid continually churning people through classroom training and make training more readily available," says Zoltak, chief learning officer at Towers Perrin Administrative Solutions, a Philadelphia-based division of New York-based management consultancy Towers Perrin.

It's the just-in-time benefits and the resulting business improvements, not cost savings, that represent the true return on investment in corporate e-learning deployments, says Brandon Hall, CEO of Brandon-hall.com, a Sunnyvale, Calif.-based consultancy. What's more, he says, the cost of bringing e-learning systems online initially cancels out operational cost savings.

That's particularly true if the company deploys a learning management system (LMS), which goes beyond basic content delivery to offer course administration, registration, tracking, reporting and skills-gap analysis. LMSs also feature collaboration technology that allows for interactive electronic whiteboards and other interaction between students and instructors over the Web.

"The cost benefits are significant, with around a 50% cost reduction for delivering a course via e-learning vs. instructor-led classroom training," says Hall. "But that percentage doesn't account for the start-up costs, which include implementing an LMS, finding a vendor to deliver content and getting IT to bring everything together."

An LMS should connect to appropriate back-end databases and human resources systems so that training managers and human resources personnel can track course and career progress, says Hall. If the organization intends to extend electronic training to customers, partners and suppliers, the system needs to run through an e-commerce extension and provide for access through outside firewalls. And if the organization is a global enterprise, it will need to replicate databases across the countries in which it does business, he says.

Think Big, Start Small

In Towers Perrin's case, corporate imperatives to support a global enterprise and better validate employee skills demanded the purchase of an LMS, according to Dave Bill, the company's manager of learning technologies. The old system lacked integration between the company's online training interface and back-end database, so all test results had to be entered manually.

Deciding which LMS to purchase came down to standards compliance, to ensure that third-party content would interact with the LMS database. Towers Perrin sought compliance with the emerging specifications from the Aviation Industry Computer-Based Training Committee (AICBC), whose work on e-learning



Making E-Learning Effective

ing standards for the aviation industry has been a benchmark for the broader e-learning industry. (See "Emerging Standards for E-Learning" at right.)

"Many [vendors] said they were AICC-compliant, but they essentially took your request to launch something online and sucked it into their proprietary code. So every time we created a new learning activity, there would have been lots of maintenance on IT's part," says Bill.

One vendor that could prove compliance was Bellevue, Wash.-based Click2Learn, says Bill. Towers Perrin now uses the vendor's Insignium LMS to automatically post employee test scores to a central data repository for tracking and planning.

Though the AICC and other standards bodies are emerging, the current lack of learning standards and the resulting incompatibilities between LMSs, third-party content and course-authoring tools mean companies should move slowly on e-learning efforts, Hall says.

"Corporations should start small, buying some off-the-shelf content," he says, adding that several providers aggregate content that can be accessed through hosted services. If successful, a company can then choose to purchase an LMS to manage both classroom and online training programs.

LMSs also show what's working for the organization, says Hall. "More than once, an LMS has clues training managers in to the fact that the L2000 course library they bought is overkill for their needs, and this keeps vendors accountable," he explains.

Management vs. Content

For Gary VanderHeiden, manager of information systems data management at Grand Rapids, Mich.-based Metropolitan Health Corp., the "bare-bones LMS" he gets through his hosting contract with Rochester, N.Y.-based content provider Element K LLC is sufficient to manage the e-learning component of the hospital's IT training program.

"I can run reports and see who took what courses, but...our primary objective was to get their learning content," says VanderHeiden.

Eventually, he wants to manage all training content through the hospital's existing LMS, OnTrack, from Chicago-based DKSystems Inc. OnTrack is currently used primarily to manage clinical, classroom-based training.

Content-management issues have likewise been a concern for health care services provider Kennedy

Health System in Voorhees, N.J. The provider has purchased an LMS from Billerica, Mass.-based Thing Learning Solutions Inc. as part of an enterprise push toward self-service e-learning for its 3,300 employees, and it also uses some of the vendor's content. However, the nature of Kennedy's business means it relies heavily on third-party health care content, which Thing doesn't offer.

"While Thing has a huge library of courses, they don't provide the health care material we need. And the major health care content provider wants us to buy their LMS," says Chuck Naughton, Kennedy's corporate director of training and organizational development. The health care provider has been reluctantly negotiating with Thing to allow access to its content through the latter's LMS, he adds.

Because of such problems, many organizations choose to leave the e-learning deployment headaches to content aggregators and other e-learning technology providers. New York-based public relations giant Hill & Knowlton Inc., for example, has outsourced delivery of its core service e-learning modules to Atlanta-based Medialist primarily

because of the complexities of delivering the rich media and live instructor-led models that it needs.

"By outsourcing to Medialist, all our employees need is a browser and a fast connection to take advantage of video streaming. They've got the skills and the hardware, so we don't have to deal with that," says Graham Stoddart-Stones, Hill & Knowlton's CIO.

Outsourced hosting makes sense in such scenarios, says Hall, adding that the model allows users to have immediate access to large amounts of content without installation headaches.

However, many of the training and IT executives Hall has surveyed say they're wary of allowing personnel data outside corporate firewalls, so they develop custom course content that doesn't lend itself to a hosting model.

Finally, Hall says, the argument that hosted systems eliminate IT problems is overstated. "Even if you host e-learning outside, IT still needs to be heavily involved, particularly on the user end," he says. "A hosted solution should not be chosen as a way to go around the IT department. They should be involved in these decisions from the get-go." ■

Gilhooley is a freelance writer in Falmouth, Maine.

Emerging Standards for E-Learning

ADL SCORE

The Advanced Distributed Learning Shareable Content Object Reference Model is a U.S. government effort to define interoperable, object-based e-learning systems for government training materials. The specification incorporates pieces of the AICC and IMS specifications (see below).

www.adlnet.org

AICC

The Aviation Industry Computer-Based Training Committee in Sugar City, Idaho, was originally formed to standardize training material for aircraft manufacturers and buyers and is influencing e-learning through its specification efforts on LMSs and learning objects.

www.aicc.org

IEEE LTSC

The Learning Technology Standards Committee of the Institute of Electrical and Electronics Engineers Inc. in New York, which has 20 different working groups, is defining specifications for learning object metadata, lesson sequencing, computer-managed instruction and content packaging.

www.ieee.org

IMS GLC

The Instructional Management System Global Learning Consortium in Burlington, Mass., which has education, commercial and government members, is developing specifications for content packaging, testing mechanisms and content identification.

www.imsglobal.org

Online learning frees employees to take classes anytime and anywhere and costs less to run than classroom training. But integration problems can wipe out those initial cost benefits. Better standards to make integration easier are on the way but don't help yet. By Kym Gilhooley

ONCE UPON A TIME, manufacturers operated on a simple build-to-stock model. They built 100 or 100,000 of an item and sold them via distribution networks. They kept track of inventory and made more of the item once stocks dipped below a threshold. Rush jobs were both rare and expensive, and configuration options almost as limited as "any color as long as it's black."

Things have changed. Concepts like just-in-time manufacturing, build-to-order (BTO), end-to-end supply chain visibility and the explosion in contract manufacturing have revolutionized plant management.

"We can have goods en route to the airport, and the customer calls us requesting a change," says Mannon Wong, vice president of operations at San Jose-based Netro Corp., a manufacturer of broadband wireless access systems. "These days, you have to go out of your way to accommodate such requests."

Netro copes with the need to incorporate that kind of flexibility into its manufacturing processes by using a Web-based manufacturing execution system (MES) from San Jose-based Dataway Inc. The MES helps the company maintain tight control over an operation in which 99% of manufacturing is outsourced and which was designed to let customers adjust hundreds of possi-

ble product configurations up until final delivery.

MES evolved during the 1980s and '90s as a staple of semiconductor fabrication plants and big aerospace and pharmaceutical concerns. But at \$500,000 to \$2 million per installation, the technology remained in the hands of big manufacturers and big government. As the name suggests, MES was originally designed to allow better management of production within a single factory.

Then, a series of changes pushed MES off the radar: The move from build-to-stock to BTO placed attention on the order end of the manufacturing equation, driving the broad adoption of enterprise resource planning (ERP) and customer relationship management (CRM); an increasing dependency on contract manufacturing necessitated tight integration with suppliers using supply chain management (SCM) software; and the arrival of the Internet sent companies scurrying to develop a Web presence and e-business applications.

Kevin Prouty, an analyst at AMR Research Inc. in Boston, says he's seen a revival of interest in MES; he attributes the turnaround to the economic downturn and the evolution of MES technology. For several years, companies focused on external-facing systems. But the moment the technology bubble burst, many firms suffered an immediate introspection. Attention shifted back to internal efficiencies, and MES regained its allure.

All the attention on the order-taking side created an imbalance. Companies could now accept orders, coordi-

REDISCOVERING EFFICIENCY

After years of looking outward with CRM and ERP systems, manufacturers are turning inward to make factories more flexible, efficient and competitive. By Drew Robb

nate supply chain logistics and communicate with customers like never before. This exposed the weakest link — visibility of the manufacturing floor. And that's where MES comes in.

MES has evolved from an inflexible, monolithic offering for the elite few into a collaborative tool that reaches beyond the walls of a single factory. It exposes shop-floor data from any of a company's manufacturing plants to anyone in the supply chain. While ERP addresses what has happened (historical and financial data) and SCM deals with what will happen, MES fills a critical gap — what's happening now.

For example, customers such as Murray Hill, N.J.-based Lucent Technologies Inc. and Espoo, Finland-based Nokia Corp. hold Netco accountable for constant changes in orders for goods that aren't even produced on its premises. Such a BTO model requires that manufacturers have a clear and detailed picture of each order and of the individual products within the order as they move through the production cycle. Only with that knowledge is it possible to make changes to configurations on short notice. Without MES, companies don't have the ability to respond at the pace demanded by today's customer.

But MES isn't just attractive to virtual manufacturers with widely dispersed operations. Almost anyone in the BTO space will find MES attractive, particularly since MES module pricing has dropped to less

We can have goods en route to the airport, and the customer calls us requesting a change. These days, you have to go out of your way to accommodate such requests.

NANNOS WONG (LEFT):

VICE PRESIDENT OF OPERATIONS, NETCO CORP.

than \$100,000 for small plants, says Prosy.

"We needed MES to gain immediate visibility into operations for real-time inventory control, yield improvements and cycle-time reduction," says Doug Barnes, IT manager at Lightwave Microsystems Corp. in San Jose. Lightwave manufactures planar lightwave circuits and integrated devices for optical communications systems. It uses InSite, a modular

MES Windows NT application from Camstar Systems Inc. in Campbell, Calif., for data collection, traceability, process control, yield management and work-in-process tracking in one facility that handles multiple functions.

Lightware previously used a homegrown access-based engineering database with simple tracking capabilities. Supervisors had to walk onto the plant floor, inspect the production line, update the sheets daily and manually enter numbers into the database.

"As everything was manual, we tended to question the validity of data, rather than act on it," says Barnes. "Management was largely in the dark."

He attributes early implementation problems to an immature manufacturing model — the optical communications industry was new and it took time to figure out the basic architecture for the system. How exactly would Lightware's ERP system, Epicor Platinum from Epicor Software Corp. in Irvine, Calif., integrate with InSite, and where should key data reside?

The company asked consultants to modify and extend ERP to contain product and bill-of-material data and feed this to the MES system via a homegrown interface using Visual Basic and SQL.

Result: a 15% increase in line yield, 20% better chip yield and a doubling of on-time delivery.

"The visibility we're getting into our operations represents an enormous competitive advantage," says Barnes. "Now, we can make better business decisions by looking directly at our work-in-process inventory status, increase yields by identifying and classifying failure mechanisms and detect bottlenecks that may have been preventing us from achieving maximum manufacturing throughput."

Lightware's use of Visual Basic and SQL, however, is a stopgap: the company wants to migrate to a Web-based platform using a soon-to-be-released Epicor-developed XML interface.

XML, in fact, appears to be emerging as an interoperability standard among business systems. "XML provides the glue to bring all systems together," says Greg Sowle, vice president of operations at Camstar.

Prosy, though, cautions against focusing on XML. MES is growing swiftly among automotive and other traditional manufacturers — industries that can't go all out with XML because many of their suppliers and customers have an investment in electronic data interchange-centric infrastructures.

Still, MES usage is expected to reach \$4.2 billion by 2004, up from \$2.75 billion last year, according to AMR. Much of that growth will come from bit-and-piece MES deployments, with plants harnessing the MES modules they need, rather than deploying expensive enterprise-wide systems.

Acma Computers Inc., a Fremont, Calif.-based PC manufacturer, for example, bought only Datasweep's manufacturing tracking module. "Our core need was for manufacturing tracking," says Acma President Allen Lee, adding that the company's PeopleSoft ERP system could adequately perform receiving and return merchandise authorization functions. ▀

Robb is a freelance writer in Tukwila, Calif.

MORE ONLINE

Read more about Netco's MES system.
www.computerworld.com/news



Ixiasoft Speeds Access to XML Data

Vendor's TextML database is optimized for handling documents in XML format

BY AMY HELEN JOHNSON

BILL BEAN, vice president of business development at American LegalNet Inc., needed a high-performance database to serve up 170,000 files to more than 1 million users per month. The catch was that the Encino, Calif.-based online supplier of electronic legal forms kept its files in XML format.

After some comparison trials that pitted relational databases against the TextML native XML database from Canadian start-up Ixia Inc. (known in the U.S. as Ixiasoft), the company went with the latter. Speed tests showed that the native product was at least 30% faster.

"It's fast, and it works," says Bean, whose Web site, www.asecureforms.com, went live in January.

Faster XML

What makes TextML faster than a relational database, says Ixiasoft CEO Philippe Gelin, is that it keeps information in original XML documents, rather than breaking it down into pieces and storing it in tables and cells as relational databases require. That conversion step is a significant performance drain, he says. In addition, the rigidity of relational database structures makes modifications to accommodate changes in the XML document structure a complex process.

"[A native XML database] is a solid technology for managing for XML," says Nick Wilkoff, an analyst at Forrester Research Inc. in Cambridge, Mass. XML files are designed to a hierarchical fashion, which is difficult to map to a relational database's

table structure, he explains.

But according to Wilkoff, the challenge for Ixiasoft is making a native XML database the preferred choice over relational databases for managing XML data. This could be a difficult idea to sell to IT departments that have a large investment in relational database infrastructure and programming skills.

Another challenge is to

emerge as the industry leader in this niche. "In some ways, they're a small fish in a small pond," with a few dozen customers and a limited number of partners, Wilkoff says.

To build critical mass, the company needs to seek out integrators and content-management vendors looking for a repository architecture for XML data stores. These are the types of implementation companies from which enterprises ask for help with their XML projects, Wilkoff explains.

TextML runs on a Windows NT 4.0 or Windows 2000 serv-



"IDEALLY, we hope to get [XML, databases] to be as common as SQL databases," says Ixiasoft's Philippe Gelin.

Ixiasoft

825 Quatrefoil Ave., Suite 200
Ottawa, Ontario K2V 3X3
(514) 279-6842

Web: www.ixiasoft.com

Wiche: Native XML database that handles XML documents more efficiently than relational databases

Company officers:

- Francois Arl, chairman
- Philippe Gelin, co-founder and CEO
- Eric Bergeron, co-founder and chief operating officer

Milestones:

- 1999 Founded as a subsidiary of Custom SM
- December 1999 Ixiasoft spun off first product released
- January 2000: Received first round of funding
- December 2000: Received second round of funding
- March 2001: TextML Version 1.0 released

Employees: 30

Brain money: \$5.5 million from Cadron SM, Fonds d'investissement Desjardins de Montreal, Investissement Desjardins, Shaw Ventures Inc. and Schneider Electric Ventures

Products/versions: TextML, Server, \$10,000; XMLat Macros, free

Customers: American LegalNet, AT&T Corp., Rochester Gas & Electric Corp., Tribunaux Administratifs du Quebec, Council on Foreign Relations Inc. and others

Red Flags for IT:

- It may be easier to adopt a relational database for XML, use than to return on a new technology.
- TextML runs only on Windows NT and 2000 servers.

er. Since the product relies on some features of the Windows operating system that are hard to duplicate on Unix, support for Unix is still up in the air, Wilkoff says.

TextML functions as a black box, so developers must build an application around it so end users can retrieve XML data, says Gelin. Ixiasoft supplies an application programming interface for developers to build those applications, based on Microsoft Corp.'s COM+. The product will also support Microsoft's .Net Web-based services initiative.

"It's an easy fit if you're already a [Microsoft] developer," Gelin says.

The product also works with the Simple Object Access Protocol and Universal Description, Discovery and Integration business directory service, which positions TextML for use in XML Web services, he says.

Coming Soon

As more industry associations create their own XML vocabularies, Ixiasoft has an opportunity to help its customers by supporting these emerging standards, according to Bean. In his case, Bean says, he'd like the work Atlanta-based LegalXML Inc. has done developing XML standards for the legal profession to be built into TextML.

The next release will raise the limit on index size, add Unicode support to indexes for multilingual capabilities and add data types that will allow search functions common to SQL databases, like numeric, in-range and time searches, according to Gelin. The company is also exploring add-ons for specialty markets, such as tool kits and libraries for document management applications.

Ixiasoft's ultimate goal is to make XML databases ubiquitous, claims Gelin. "Ideally, we hope to get them to be as common as SQL databases," he says. ■

Johnson is a Computerworld contributing writer in Seattle.

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Relational Resistance

Ixiasoft's strongest competition comes from traditional relational database vendors like Oracle Corp., says Forrester analyst Nick Wilkoff. IT personnel are already familiar with those companies' tools, and instead of learning about a new technology like native XML databases, enterprises are likely to adapt their existing relational databases for use as XML repositories, he says.

Whatever the approach, IT managers will have to pick a technology strategy for managing XML data. According to Forrester's research, 90% of the Global 3,500 use XML documents regularly, and an additional 35% are involved in pilot projects or are rolling out the technology. "XML is catching on as the lingua franca for data transfer and the reuse and repurposing of content," says Wilkoff.

The challenge companies face is how to handle the native XML database technology into the forefront as the industry standard for XML storage needs, explains Wilkoff.

"But it's a pretty big hill for them to have to climb over," he says.

Software A6

Darmstadt, Germany
www.softwinet.com
Software A6 markets its Taming XML database to large enterprises, with a price that makes it less attractive to the midsize businesses Wilkoff says he sees as Ixiasoft's customer base. Taming also supports a wider variety of platforms, including IBM's AIX, Linux for IBM S/390 mainframes and Sun Microsystems Inc.'s Solaris.

XML Global Technologies Inc.

Vancouver, British Columbia
www.xmlglobal.com
XML Global focuses on integrating data within existing applications and databases by transforming it into a native XML data set, GoXML. Transform creates a native XML database, GoXML, DE, TextML, and GoXML. CD offer in their technical implementation, TextML, is built around Microsoft's COM technology, while GoXML, DE uses Java. —Amy Helen Johnson

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COMPUTERWORLD

Hiring the Dot-gone

Technology workers are being laid off from dot-com companies in large numbers. Are these workers the right fit for corporate IT jobs? *Computerworld's* Julekha Dash asked two technical recruiters for their views.

NOT VERY long ago, prized IT workers were besieged by calls and e-mails from recruiters and hiring managers and had their pick of job offers.

Now, as layoffs escalate, some technologists say they're lucky to have recruiters even return their phone calls.

Companies that are still aggressively hiring IT workers

have more candidates to pick from than they did a year ago. But choosing from the pool of former dot-com workers can be tough. Work habits at traditional companies differ greatly from those at the often undisciplined dot-com start-ups.

Computerworld asked two recruiters — **Michael Zinn** from Michael D. Zinn & Associates Inc. in Princeton, N.J., and **Shawn Galloway** from Genera-



“

If the position you are looking [to fill] is real team-oriented, you [ask them] if they are used to working by themselves.

SHAWN GALLOWAY,
GENERATION I.T.

tion I.T. Inc. in Houston — to give their advice about how to hire in this ever-changing job market.

What are the best sources for finding laid-off workers?

GALLOWAY: Going to the companies and asking them for a list. There's really a lot of ways to do it. Lots of [recruiters] are going to tech fairs nowadays. A lot of companies offer outplacement services. Some organizations [offering job-hunting assistance] have meetings once a month where you can network and share resources.

How do you select the right person for your company?

GALLOWAY: Before we submit anybody [to our clients], we interview everybody and do reference checks. You just have to talk to co-workers. Just do as much as you can on background checks. You go through a lot of questions and answers. If you're a traditional company [where] workers wear suits and ties, you ask them if they've been used to that. If the position you are looking [to fill] is real team-oriented, you [ask them] if they are used to working by themselves.

ZINN: You have to determine who you are in terms of your [company] culture. Dot-com workers are good at branding, are entrepreneurial. A lot are tech-savvy and innovators.

As a manager, you want to hire someone who is going to stay with you even if the market comes back. You have to determine whether they can work in an environment that is more structured but can retain the technology savvy they got through the dot-com world. Former dot-com workers are in a perfect position to create Web-based applications. [Look for] someone who has been in the Fortune 500 world and a dot-com.

For employers, what should you look for on a résumé from a person who has been laid off from a dot-com company? How do you know whether they can fit into a more traditional environment?

“

You have to determine whether they can work in an environment that is more structured.

MICHAEL ZINN,
MICHAEL D. ZINN & ASSOCIATES



ZINN: Look for a period in their life when they have been with a traditional company and the length of time. Maybe that person is more risk-averse and would be more comfortable working [for a brick-and-mortar company].

Employers should be wary of any employees who has only been in a dot-com company.

To me, the best person out there for a traditional corporate environment is maybe somebody who has spent five to seven years in a traditional environment, then spent some years in a dot-com environment.

GALLOWAY: Look for how long they've been laid off. Look for lapses in time and why they're being laid off. It depends on the project [you need someone to work on]. If a worker went from a Fortune 500 company to a dot-com, I'd ask them why they did that. It makes them more of a risk taker. Maybe they'd work a little bit harder. ■

MORE ONLINE

For a look at recent job cut numbers, go to www.computerworld.com/fareouts.

FRANK HAYES/FRANKLY SPEAKING

Damage Control

ELI LILLY DID just about everything it was supposed to do to protect its customers' privacy. When the company set up its Medi-Messenger e-mail service to remind people to take their medications, the automated system sent the messages as blind carbon copies — the "To:" line was blank. That worked fine for two years — until June 27, when Lilly sent one last mass e-mail to notify users that it was discontinuing the service. Because of human error, that one included hundreds of names — all the Medi-Messenger users — in the "To:" line.

Now that was a privacy failure. And it wasn't the worst of it. Because when something goes wrong with privacy, we don't just have

to deal with what happened. We also have to deal with what people think happened.

As IT people, it's easy to assume that when something blows up on us — whether because of a technical glitch, operational error, policy mistake or just one of those things — we have to deal only with the problems we actually created. That just makes sense, right?

And that's what Lilly's people did. After that last message went out, complaints started coming in. The company responded individually to every complaint and sent a separate message to all Medi-Messenger users, apologizing for exposing their names. Lilly's IT people also set up new code-review procedures and blocked all outgoing messages with more than one name in the "To:" field.

In short, they cleaned up the mess they made. But it wasn't enough. One Medi-Messenger user, who used the service to remind him to take his Prozac, was outraged. Now hundreds of other people knew he was taking antidepressants, he thought. He contacted the American Civil Liberties Union (ACLU), which fired off a letter to the Federal Trade Commission accusing Eli Lilly of negligence, deceptive trade practices and violations of Lilly's own published privacy policy.

A week later, stories in *The Washington Post* and other news outlets were quoting the ACLU's letter and focusing on the exposure of Prozac users.

Did Eli Lilly accidentally expose hundreds of Prozac users? No. Not everyone using Medi-Messenger was taking Prozac. True, patients could sign up for the service

through the Prozac.com Web site. But people who don't take Prozac also signed up for the service.

In other words, privacy was violated. But no one was exposed as a Prozac user — just as a Medi-Messenger user.

That's not the mess Eli Lilly created. But it's still a mess that Lilly has to clean up.

There's a lesson here for every IT shop. By now, we should all have contingency plans for dealing with privacy failures. Whether that means customer information exposed on a Web site, names on a mailing list or credit card numbers stolen by crackers, we should already have plans coordinated with our companies' legal and public relations departments for notifying the affected customers, apologizing for the problem and — of course — correcting it.

But privacy issues are special. People are understandably afraid — of credit card fraud, identity theft and having their medical conditions or other personal information exposed. They'll make assumptions about what they fear really happened. They'll believe the worst.

When that happens, we've got to be ready with the facts and explanations that the legal and public relations staffs will need to shoot down rumors and allay fears. They'll do the explaining, but we must make sure they've got it right — not just for what happened, but also for what didn't happen.

If that's not part of your plan, add it now. Because when it comes to privacy, cleaning up the mess we've made isn't enough. We have to clean up the mess people think we've made, too. ▀



Frank Hayes, *Computerworld's* senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

SHARK TANK

TRAVEL COMPANY execs boast they "know all about computers" and are looking for a custom reservation system. Software consultant pilot fish shows through his demo, showing how to take reservations, track inventory and calculate commissions. Then there's an awkward silence. Finally, the general manager pipes up. "Look, when he moves the thing on the desk, the arrow on the screen moves too!"

GO AHEAD, BOTHER ME!

E-mail server crashes over the weekend, and a junior IT staffer happens to be working and notices. But she doesn't want to call the boss on a Sunday morning. Instead, she sends e-mail. "Since our server was down, she e-mailed me here three different accounts on other servers," says her pilot fish boss. "All to my account on the downed server."

WILL YOU TAKE a job that involves 30% travel? recruiter pilot fish asks programmer job candidate Sam. Says the coder-shinker, and fish sends him off to

the job interview. When fish asks later why he turned down the job, he replies, "Too much travel," I told you about that ahead of time, fish says. "I thought you meant 30% a year," programmer says. "But they want 30% a month and I can't do that."

DEMO OF A NEW

multiplatform XML tool puzzles pilot fish. The data is on a mainframe in a proprietary database requiring special access software, and sucking up all that data will require a lot of I/O. But the vendor guy wants to run his demo on a different server. Shouldn't the tool run on the same machine as the tool, to make the code path shorter? asks fish. "Well," says the demo guy, "the servers are only 30 feet apart!"

Here's my code path: sharky@computerworld.com. You get a stylish Shark shirt — the perfect summer fashion statement — if we use your true tale of IT life. And check out the daily feed and the Sharkies on the Web at computerworld.com/sharky.

The 5th Wave



"Well, it's not quite done. I've got the gurgling exit sink and the rotating Novacaine eyeglass, but I still have to add the high-speed whining drill audio track."

TECHNOLOGY AND THE BOTTOM LINE



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JUST COUNT IT

Bean-counting works, but pick the right beans to tally true ROI. p. 16

A SUPPLEMENT TO COMPUTERWORLD





WE DIDN'T JUST JUMP ON THE
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WE BUILT IT.

It's time to set the record straight. Long before our competitors even added the word "infrastructure" to their vocabulary, we were busy creating it. Since we first launched Unicenter®, it has become the de facto global standard for managing eBusiness infrastructure. But we didn't stop there—we're also the world leader in security and storage software. Every day, our software handles over 180 million transactions, protects \$50 billion in wire transfers and stores 40 million security exchanges. Expertise doesn't happen overnight. It's taken 25 years of hard work and leadership to get to be the best. So when we say you can trust every one of our 18,000 employees around the world to deliver the software and service that your eBusiness® success depends on, we really mean it.



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risk & reward

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Not all companies count the same things. Some figure the cost of capital into technology ROI calculations, some don't. Metrics-obsessed companies, such as Lockheed and Caterpillar, measure, remeasure and then audit everything, including their own metrics data. Learn what's worth counting and what isn't. BY JOHANNA AMBROSIO

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GM teams with Fidelity to give both firms a lift: GM gets free financial content for its in-car information service, and Fidelity gains access to 800,000 commuters. The U.S. Postal Service buddies up with archival FedEx to expand its delivery footprint. Want to hold corporate hands too? Learn the critical role IT plays in perfect pair-ups. BY STEVE ULFELDER

featured online this month

Chemical Weapon

Eastman Chemical in sleepy Kingsport, Tenn., has outlived its low-tech customers with PCs and Web access, invested millions in Internet technology start-ups and launched a Web-based logistics and shipping company. Fred Buchler, e-business czar at the \$5 billion company, talks to *ROI* about how these initiatives are paying off big-time. Go to www.computerworld.com/roi for the full story.

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TAKING STOCK



that companies can be counting (page 16). Rather than measuring everything, what's far more important, she writes, is for executives to precisely determine a set of goals that's strategic to their individual enterprises. After that, they should set up and rely on a few well-chosen yardsticks to tell them how IT is performing against those goals. That's what Six Sigma companies like Intel are doing (see story at www.computerworld.com/itn). ■ Knowing what is and isn't strategic is also critical when it comes to choosing the best and potentially most profitable business partners, writes Steve Ulfelder in our story on how unlikely corporate bedfellows are increasingly teaming up to cut millions in transportation, logistics, real estate and other costs (page 24). Experts are forecasting that by 2002, a whopping 35% of all corporations' revenues will come from such alliances, up from 19% in 1996. ■ Columnist Guy Tan also focuses on strategy in this issue, noting that the key to deriving the greatest value from Web-based service providers that offer "hy-the-drink" software is to first determine which of your operations are truly strategic and which aren't (page 32). Those that aren't should be first in line for outsourcing, he writes. ■ The bottom line is that counting and strategy are inextricably linked. The only way to measure success is to first determine what's important, which, according to my favorite genius, "should be made as simple as possible, but not simpler." — *Julia King*

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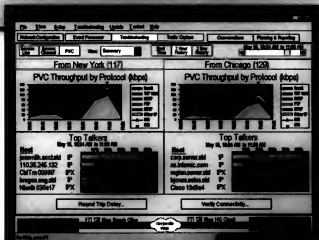
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TIPS, TACTICS AND TIMELY INFO ABOUT TECHNOLOGY PAYBACK



project management IT Enemy No. 1: Half-Baked Ideas

THE NO. 1 PROBLEM in IT project management is that too many half-baked ideas are launched as projects, says Gopal K. Kapur, president of the Center for Project Management in San Ramon, Calif. "The staff indulges the bosses [who come up with half-baked ideas]. The higher the boss, the more indulgence," Kapur says.

But there may be something valuable buried in that half-baked idea. The key is to ask questions designed to filter out the bubble and find the value. Kapur suggests asking the following:

Half-Baked Ideas:

- Do project managers
- use too much
- suck up processing
- power

- What specific business strategy is this project linked to?
- What are the implications of doing nothing?
- What are the measures of success? (And after completion of the project, who can declare success?)
- How realistic is the deadline?
- Under what conditions would we shut down the project?

The second-biggest problem: executives who say they're the "sponsor" of the project but don't devote enough time to oversight.

talking head

"We have a sense that the future will be on the Internet, but we're not going to go running down the hall with our hair on fire."

— RON COPPEL, a vice president at wholesaler Eby-Brown Co., quoted in *The Industry Standard*

tough questions Top Shareholder Issues in 2001

BE PREPARED for these questions at the annual meeting:



1. What's the company doing to retain key employees?
2. How can the company ensure that management produces satisfactory results?
3. How is management handling the risks and rewards of globalization?
4. How is the company leveraging the Internet to increase earnings and shareholder value?
5. What's management doing to increase shareholder value in a volatile stock market?

Source: Ernst & Young Shareholders Guide



hiring

Dot-Com Refugees: A New Breed

THEY'RE KNOWN AS THE DOT-COMER-
backers, the employees jettisoned by
money-losing dot-coms and now on the
doorsteps of conventional employers. Hiring
managers, still facing an IT skills shortage, are
wary to exploit this talent pool. But they
need to understand that dot-com refugees
will arrive with certain expectations, warned
analyst Barbara Gomelski in a recent bul-
letin from Gartner Inc. in Stamford, Conn.
They may be short-termers. Some will jump
back to start-ups if given the chance.

They want bricks and clicks. They want
stability and real leadership, but they also
want to work on projects with cutting-edge
technology.

They have high expectations. They're used to
high pay and creative perks. They prefer
cash and are understandably leery of stock
options.

They want their lives back. Many of them
made huge sacrifices during their dot-com
stints and stretched the work/home bal-
ance to the breaking point. No more.

common cents-off

Consumers Like Coupons, Not Community Fluff

YOU'VE GONE TO A LOT OF TROUBLE
to place interactive games, online
chat and pseudofriendly lifestyle content
on your Web site, all to make it feel like a
"community." The bad news: Consumers
don't really care.

Information Resources Inc. (IRI), the
Chicago-based outfit that tracks all sorts of
consumer data, recently found that pack-
aged-goods manufacturers are overdeliv-
ering—and likely overspending—on Web

features that consumers only shrug off.

The study of 7,900 shoppers showed
that only 12% want online
games and only 27% want
lifestyle features. What they
really crave are the basics:
product information, and an
e-mail address and 800 num-
ber that they can use to contact the com-
pany. People say they'd prefer free sam-
ples, coupons and special offers instead

of the fake community stuff, but few of the
companies actually offer those on their
brand Web sites.

After a period of experi-
mentation, it's now time for
packaged-goods makers to
focus on high-payoff Web site
features, says IRI consultant

Brian Murphy. Less than one-third (28%) of
the companies studied are attempting to
calculate the ROI of their Web sites.

10

the list

Valuable Content

Investing in a corporate intranet
or portal? Here's the information
employees really want:

- 1 Employee directories/phone lists
- 2 Technical or white papers
- 3 Information about their own
and other companies' products
- 4 Job-related books
- 5 Tips on best practices
- 6 Trade journals and publications
- 7 Standards and specifications
- 8 Technical training
- 9 Organizational charts
- 10 Market analysis

Source: Outsell Inc., Bayline.com, Calif., survey
of 4,700 corporate end users, February 2001

cup o' joe Starbucks' Real Cell Phone Plans



TIME AFTER TIME, MEDIA STORIES ABOUT LOCATION-based mobile e-commerce have cited the example of people walking around a city with wireless devices and getting electronic coupons through them from a nearby Starbucks for, say, 50 cents off a latte. It sounds good, but the reality is that Starbucks Corp. has no such plans, says spokeswoman Cheri Libby.

So why does that example keep popping up like an urban legend? Libby says she figures it's a scenario that seems plausible and something that "people can relate to."

However, Seattle-based Starbucks does have a lower tech idea: It's looking at the possibility of letting customers order beverages over their cell phones. But "this would be at the initiation of the customer," Libby points out. In other words, Starbucks won't be pushing annoying promotions at people over mobile devices.

business strategists CIOs Take Center Stage

CIOs SAY THEY'VE MOVED FROM DEVELOPING SYSTEMS TO DEVELOPING business strategy during the past five years, according to a survey of CIOs at 1,400 U.S. companies. CIOs now say the following about their jobs, compared with five years ago:

Have increased interaction with other departments	28%
Do more strategic planning	27%
Have a greater role in bottom-line results	25%
Have expanded leadership/management roles	16%
Other/Don't know	4%

Source: RMI Consulting, Menlo Park, Calif.

research roundup Around the World In 60 Seconds

MORE THAN 246,000 CELL PHONES AND PERSONAL digital assistants, many packed with company data, will be lost at U.S. airports this year. Only 25% will be returned to their owners. *Kearney Inc., Stamford, Conn.*

■ When a supply chain glitch hits the news, the affected firm's stock price tumbles an average of 8.6%, according to a study of 1990s supply chain problems. *Georgia Institute of Technology, Atlanta*

■ Only 3% of mobile phone users in the U.S. say they have any intention of using the devices to purchase something via the Internet. That's bad news for mobile e-commerce. *JAT Kearney Inc., Chicago*

■ Almost nine out of 10 (87%) online consumers in the U.S. are "privacy assertive." They refuse to give out personal information they feel isn't necessary for a transaction. *Privacy of American Business, Hackensack, N.J.*

■ Most insurance claims for PCs are for accidental damage, such as dropping a laptop. The next-largest source of claims: theft. *Software Inc., Columbus, Ohio*

■ More than one-third of business e-mail is "occupational spam," or unnecessary messages from well-meaning co-workers. Be judicious with the "reply all" button. *Kearney*



This is the FOREMAN

That placed the Order

That went through the Dealer

That notified Contracts

That alerted Manufacturing

That checked with Accounting

That contacted Shipping

That sent the Delivery

That sealed the Process

That lives in the Integration Software

That we Built.

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CROSSWORLDS

BY THORNTON A. MAY

Behind Every CIO? A Savvy CFO

And don't try to fool them with ROI analyzer gizmos; they want business value

I'M ALWAYS AMAZED THAT VENDORS CAPABLE OF stunning technological innovation can be so brain-dead when it comes to understanding how executives create objectives and then fund programs to accomplish them. What hasn't changed as we migrate to the "real" New Economy is the sad fact that vendors simply don't understand the reality of how money happens in high performance organizations. Best practice funding happens in real time, is based on opportunities and is perishable. (For example, if a project fails to meet milestones or circumstances change, funding is quickly withdrawn and reallocated.)

The newest new thing in vendorland is their worship of ROI. Many have gone so far as to include with their products an ROI calculator—an amazing software-based gizmo that demonstrates just how much money you will save by buying Technology X.

The breakdown in reality is apparent when you ask vendors to describe the chief financial officer, the person for whom they designed their ROI calculators. No bigot ever so misrepresented another human being. No comic book illustrator ever so exaggerated demonic traits. The CFO, according to most vendor accounts, is the enemy—a dry, colorless automaton focused on driving down costs, obsessed with decimal point-precise numbers and addicted to spreadsheets. One wonders whether they've ever met a real CFO.

CFOs are some of the most misunderstood people on the planet. Somewhere along the way, they got mistaken for accountants. Truth be told, behind every great CIO is a great CFO. Behind some of the truly game-changing technology implementations, you'll find the support and guidance of switched-on CFOs.

Jack Brennan, former CFO at Vanguard Financial, and now CEO, has created a world-class funding environment where resources are delivered to high-impact projects as needed. At Vanguard, "no one is guaranteed money," he says. And in a rapidly changing world, Brennan explains, "we take money away from people all the time." Funding in high performance companies isn't driven by rules as much as it responds to opportunities.

High-level executives may want to refer to the following Golden Rules before applying ROI calculators:

1. Ask the vendor to demonstrate, in your vertical market, where the tool told a prospect not to go forward with the purchase of the proposed solution.
2. Ask the vendor to apply the ROI calculator to the worst IT investment decision ever made in your organization. See if the calculator tells you not to go forward.
3. Assemble a panel of CFOs, finance students from a local MBA program, finance professors, competing vendors and customers. Have them review the output of the ROI calculator and give comments.

When vendors step up and guarantee the business value that their ROI gizmos say will occur, then we have something. Until then, these gizmos are little more than fad—hula hoops for childish companies that are shaking in the middle but not moving anywhere.

ROI



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BY NINA LYTTON

Maintenance Dollars at Work

Software vendors have it right: Maintenance work can double as development

MOST EXECUTIVES SAY THEIR BUSINESSES ARE changing faster than their IT organizations can keep critical systems current. Yet IT can't afford to make any major changes because so much of the technology budget is devoted to incremental maintenance.

The frustration is most acute at Fortune 1,000 companies. A recent Crossroads-OSA poll of 200 executives showed that only about 3% of their companies' programmers are assigned to new systems development. Almost 52% are devoted to software maintenance. Just over 45% are dedicated to interface development and maintenance.

Businesspeople know something is wrong but find it hard to hold their own when discussing technical resource allocation. One solution is for Fortune 1,000 firms to adopt the approach of independent software vendors, whose ratio of new development to maintenance work is about 1-to-1, compared with a Fortune 1,000 ratio of 1-to-17.

Why the huge difference? Are software vendors exempt from maintaining their applications? Hardly. Rather, they do much of the maintenance as the applications are built.

Disciplined by the competitive market, software vendors build applications with staying power. This means designing applications that make more frequent and disciplined use of standards and shared components. This keeps the interaction among program components more uniform

and better documented for fewer maintenance-induced errors. Moreover, software vendors look at maintenance as an opportunity to periodically go the extra mile and rewrite modules to keep the architecture fresh and flexible.

Fortune 1,000 technology firms should borrow this page from the software vendors' playbook. By creating and maintaining applications with flexibility as a goal, and spending more effort reeling in spaghetti code, the Fortune 1,000 can make the same dollars work twice.

But this advice isn't a panacea for all large companies. In industries such as financial services, corporations typically regard in-house development as an important ongoing responsibility. But in manufacturing, purchased applications, services and software components are combined with legacy systems. Application development has a limited role, and thus maintenance is dwindling. This leaves the development and maintenance of interfaces as the primary focus.

To succeed, businesses must automate interface development and maintenance. The financial returns are as dramatic as when manufacturing moved to the assembly line. Companies can reduce the cost of keeping line-of-business applications current. Interface maintenance that used to take months to develop and test can be done in an afternoon simply by changing parameters. Such an improvement is an opportunity to gain competitive advantage.

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WHAT TO



There's no shortage of business and technical details to measure when determining technology's value to the business. The trick is picking the right things to quantify



SIMPLIFY YOUR LIFE" IS MORE THAN JUST THE latest New Age mantra. It's advice well worth heeding when it comes to IT metrics. If a company is to have any shot at measuring IT's worth to the business, most experts agree, it would be smarter to rely on just a few well-chosen yardsticks than to drown in a sea of 500 data points.

But that's about all the experts agree on. By itself, measurement is no automatic guarantee that IT aligns with the business or gives value to it. For one thing, there's little consensus on which metrics should be used. ROI, that old financial stalwart, turns out

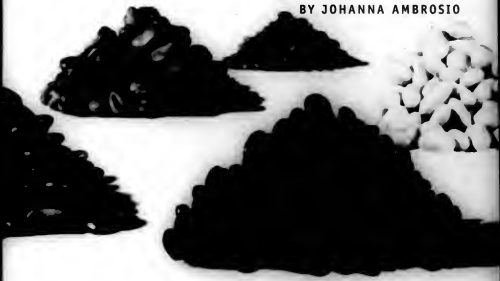
to be squishy when it's used to measure IT's business value. Some other traditional financial measures don't work well either.

Revenue per employee, for example, doesn't take into account that a great deal of a company's IT operations or manufacturing and production work might be outsourced. As metrics expert and consultant Paul A. Strassmann points out, "If you look at the [profit and loss] statements of American corporations, 20% to 85% of the revenue is based on assembling components or integrating materials produced by humans in other companies."

PHOTOGRAPHS BY VITO ALUIA

COUNT?

BY JOHANNA AMBROSIO



So, he says, one way to increase revenue per employee is "just don't make it, and move the people to someone else's P&L."

Welcome to the brave new world of IT metrics, where pretty much everything you thought you knew has changed. Sure, it's still important to measure things like network availability, compute cycles and even, if you must, lines of code. But those things alone aren't going to provide upper management, employees or stockholders with a better idea of what IT is delivering to the company's bottom line or overall success.

Instead, think big picture, most experts say. Find out what business managers and executives need to know based on cor-

porate strategy and goals, and set up metrics and communications processes to tell them how IT is performing against those goals.

There are at least a half-dozen formal, recognized methods for tallying IT's worth, each with its own inherent strengths and weaknesses as well as consultants to back it. These range from the balanced-scorecard approach to the method of looking at each IT project as an investment. But the truth is that there's no simple way to measure the true value of IT that works for everyone.

Experts are also split on the true value of including intangible factors such as employee satisfaction as part of the equation in figuring out IT's worth. But even if

Continued on page 20

TECHNOLOGY *BRIEF*

St. Bernard Software's iPrism™ Internet Filtering improves productivity at a small price tag

In today's economic environment, senior management is paying close attention to the potential return on any technology investment. This helps explain the rapid growth of iPrism, an Internet monitoring and filtering device from St. Bernard Software Inc. As the industry's leading Web access appliance, iPrism Internet Filtering Appliance boosts employee productivity enough to pay for itself in weeks!

Many executives grow uncomfortable at the thought of reining in employees' Internet activities, but that discomfort vanishes when the severity of the problem is examined.

◆Computer Economics Inc., a Carlsbad, Calif.-based research firm reports that U.S. businesses lose \$5.3 billion a year to workers' extraneous Web surfing.

◆Framingham, Mass.-based IDC says "cyber-loafing" may account for as much as 40% of knowledge workers' lost productivity.

◆Nielsen/Net Ratings found that in a typical month, people who use the Internet at work spent an average of 21 hours online — doubling the online time of home users.

◆Several reports have found that more than half of all online stock trades and consumer banking transactions are made by people at work.

As the evidence that the Web is widely used for on-work purposes

builds, executives fear that Internet filtering is like being Big Brother. But fear fades and is replaced by a much more tangible, legitimate concern: In order to protect stakeholder value and maximize your business' potential, don't you have to guard against employee Internet abuse? No responsible organization would knowingly let workers pilfer inventory or office supplies. Add to that, the fact that many companies monitor telephone usage to prevent abuse; why should lost productivity caused by excessive Internet use be treated differently?

Industry watchers say the government, through the arm of the courts, is delivering a stern warning to American businesses: A company is liable for most wrongs that its employees commit using computers,

e-mail or browsers on the job. If a company wants to ward off that kind of liability, it should set up a business-only policy and make sure employees understand it and adhere to it.

More and more corporations are taking steps to reclaim the time lost to Web-surfing; a recent study by the American Management Association showed that about two-thirds of large U.S. businesses have at least some electronic surveillance in place.

Once you acknowledge the need to monitor employees' Internet usage, you will find, as with any new hot technology, that there is a number of ways to get the job done.

Before iPrism was developed, the company took the time to investigate all the alternative solutions on the market at that time. St. Bernard found that a dedicated appliance would be the best choice.

Today, leading businesses are simplifying their IT picture by adopting appliances rather than software applications. An appliance is a hardware device that performs a single function — and performs it well, because that is its sole mission.

To illustrate, you can have a toaster for making toast, a blender for making drinks and a refrigerator for keeping food fresh. You don't have one machine that blends, toasts and cools. This is the concept of the appli-



ance vs. server. The server with filtering, firewall and other software is much like the kitchen analogy.

The same holds true for information appliances, be they "network appliances" dedicated to Internet browsing, or St. Bernard's iPrism — a cost-effective, straightforward content-filtering solution that IT departments can plug in and forget about. In a recent report, IDC wrote, "the promise of appliances is one of low cost and simplicity... these products place a very high value on ease of use and legacy-free operation."

Many software-based filtering tools require the purchase of at least one, and often multiple, servers (though the vendors of these applications are not likely to trumpet that fact). In today's economic climate, procuring a server is no easy task — it's often a bureaucratic nightmare

ucts require intensive human monitoring. IT departments have better things to do than filtering. For all these reasons, St. Bernard's iPrism, the appliance solution, stands out.

iPrism

St. Bernard Software's iPrism is the industry's first appliance-based solution to Internet content filtering.

Its promise of simplicity begins with its external appearance; iPrism is about the size of a pizza box — only 1.75 inches tall — it is rack-mountable.

In addition to a power plug, it has two network connections (10/100M bit/sec.) and is typically connected between a router and a LAN, though other connection options are avail-

iPrism's total cost of ownership is a full 58% lower than that of some software-based filtering tools.

Even more important is that it does a superior job. Analysts and testers praise iPrism's ease of use and flexibility. Once connected, the appliance automatically downloads from St. Bernard a comprehensive list of Web sites and their ratings — millions of

Web sites, with thousands of pages added per day. Using iPrism's intuitive interface, administrators can block certain Web categories, while limiting others.

For example, a company might allow access to online game sites during lunch hours only; and a purchasing department be allowed to access auction sites, while other employees cannot access them.

Updating St. Bernard's list of Web sites is a non-issue; the updates download automatically. For many IT managers, this ease of administration is the clincher; iPrism is truly a set-it-and-forget-it solution to a problem that more and more businesses are addressing. The product's value proposition makes it a must see for any executive seeking to improve on productivity. ♦



- ♦ Seamless network integration
- ♦ Quick, easy installation
- ♦ No necessary additional hardware or software
- ♦ Automatic nightly updates
- ♦ Rack mountable 1u
- ♦ 60+ categories
- ♦ Built-in reports

even in a large organization, and may be cost-prohibitive in a midsize one.

Also, new applications invariably bring headaches. For example, the new application may conflict with other software. All too often, calls for support lead to a blame game among various vendors.

And even when the procurement and implementation are over with, many software-based filtering prod-

ucts require intensive human monitoring. Because the appliance is self-contained, it runs regardless of operating system and environment.

When it comes to cost, iPrism beats leading software solutions hands-down. Software-based competitors tend to cost about 15% more, and that doesn't take into account any additional servers that may be needed, let alone personnel costs. Overall,



"IF YOU CAN'T RUN the proposed results of your

investment through the financials, it's an indication that something's wrong."

Continued from page 17 satisfaction can be measured, how does one attach a dollar value? Do happier employees produce more? For those reasons, some CIOs say that if something can't be measured, it shouldn't be part of any metric. There's no one answer that works every time for everybody.

Doug Turk, executive vice president at Infotri Corp., a consulting firm in Irvine, Calif., has conducted dozens of ROI analyses for customer relationship management (CRM) and e-commerce systems, among others. He advocates measuring ROI for IT projects "just like measuring the value of any other investment you'll make." You must determine "what is the metric you're trying to improve—increase the number of sales leads or reduce the cost per lead, reduce the sales cycle time, improve the effectiveness of the sale and the size of the deal," he says. Once the goals are clear, dollar values can be assigned.

"Ask the hard business questions first," Turk advises. "What is the current sales cycle, and where are the opportunities to create business value? If the cycle time is 90 days and the average sale is \$5 million, then you've got your baseline. This is where you're at, pre-technology adoption."

Turk suggests that you always start with the business value you're after. "Implement the technology to support that, and then measure it," he says.

The idea is to identify a handful of core metrics that are meaningful to users and executives and then measure them from a set point in time. This is your baseline. Measure them the same way every three to six months, and report the results to all interested parties. Also, experts say, plan on spending 2% to 3% of your IT budget to do metrics right.

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The weighted cost of capital, a standard accounting measure, takes into account interest rates, the company's tax rate, the risk inherent in the project or business, the shares outstanding and other factors. Each industry, and each company, has its own weighted cost of capital. The message: Any project or business that returns less than the weighted cost of capital isn't worth doing because it won't provide full investor value.

About two-thirds of all IT projects at



Ingram Martin are justified on the basis of savings, with the last third driving new revenue. "We're really looking at ways to continue to drive selling, general and administrative expenses down," Abramo says. One project in the cost-cutting category, Ingram Martin hopes, is Orion, which helps the \$10-billion electronics distributor's procurement staff manage the workflow of purchasing.

"We buy a lot of stuff, and the idea with Orion is to take the time and mystery out of how much to order," Abramo says. One important measure used here is the fill rate—the rate at which Ingram can fill a customer's order when it's placed. "I don't want to hold too much in inventory, but I want to fill the customer's order as quickly as possible," he explains. Orion's success isn't yet clear because it will take a year to get meaningful figures, he says.

In the category of revenue-generating IT projects, Ingram built a model to predict customer attrition, and it's correct 80% of the time. "Now I know who's vulnerable" and who might go to a rival, Abramo says. Ingram can now change its behavior before a customer decides to leave. But the company won't know the project's full impact until the model is put into production.

WHAT ABOUT INTANGIBLES?

THERE ARE SEVERAL WAYS TO ASSESS A METRIC. SOME BELIEVE very strongly that only things that can be directly measured belong in any IT valuation. Others think that softer numbers, like customer satisfaction levels, are useful, too. Tom Mallison, vice president of management at Infotrac in Chicago, says the CEOs he talks with are very clear about wanting to know the rate of return of IT projects. "They say, 'Show me the bottom line, or stop talking,'" he says. "They want to know the impact on the operating margins" of the company, he adds.

For this reason, he says, companies should incorporate only tangible items into a financial analysis of a proposed IT project. "It's not impossible to quantify everything," Mallison says, "but it does require some work. If you can't run the proposed results of your investment through the financials, it's probably an indication that something's wrong, that you haven't done enough analysis."

But Kosmo Kalliarides, a partner at The Parthenon Group, a consulting firm in Boston, says intangibles can be a huge factor in how to value IT externally, at the customer touch points. This is much harder to do—to understand what the customer really values in a service, offering or product. Do they value it enough not to switch to a competitor or to pay for it? To the extent that an IT service forms the basis of a product or service or helps the company deliver it, those questions are relevant, he says.

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THE 1-2-3 COUNT

Rod Hall, vice president of consulting services at Chicago-based consultancy Compass America Inc., says there are three types of IT measurements, and a "smart" CIO nails all three and doesn't confuse them." They are:

METRICS USED TO MANAGE IT INTERNALLY—network uptime, for example. These aren't very useful to upper management, but they do help a CIO track the costs of running the IT group and prove that it's an efficient operation.

METRICS FOR SENIOR EXECUTIVES—a one-page report card, for example. If IT is considered a cost center, "you want to show how the costs compare to IT in similar companies," Hall says. The report card can also include IT services and costs broken out on a per-user basis, as well as a sense of the quality of those services and their value to users. Make sure to define quality and value in your report, Hall advises.

METRICS FOR BUSINESS UNIT MANAGERS—detailed usage reports, for example. These managers also value forecast information so they can budget more accurately. "If I'm running 20,000 desktops in my business unit and consumption goes up by 10%, how will the costs change?" Hall says. "Those numbers need to be unique to each business unit."

—Johanna Ambrosio

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Experiences at Intel Corp. (more about Intel at www.computerworld.com/101) and Securities Business Services Inc. (SBSI) in Rye Brook, N.Y., show this dichotomy pretty clearly. Intel's CIO says it's fine to take intangibles into account when measuring IT's contribution to the business. SBSI's CIO disagrees.

Intel measures plenty of hard data, such as cost as a share and compute cycles for its design engineers. But the company also includes intangibles, such as customer satisfaction and quality, in the equation of how well IT is doing in general.

"One of the things we've concluded, and this is something Craig Barrett, our CEO, has completely bought in to, is that a large percentage of the benefits from IT is not measurable in straight financial terms," says Doug Busch, Intel's CIO. "We're helping employees be more responsive to customers by giving them data they need to make better decisions and reduce decision-making time, being more accurate and digging deeper into things. These don't lend themselves to a bottom-line ROI number."

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Continued from page 17

satisfaction can be measured, how does one attach a dollar value? Do happier employees produce more? For those reasons, some CIOs say that if something can't be measured, it shouldn't be part of any metric. There's no one answer that works every time for everybody.

Doug Turk, executive vice president at Inforte Corp., a consulting firm in Irvine, Calif., has conducted dozens of ROI analyses for customer relationship management (CRM) and e-marketplace systems, among others. He advocates measuring ROI for IT projects "just like measuring the value of any other investment you'll make." You must determine "what is the metric you're trying to improve — increase the number of sales leads or reduce the cost per lead, reduce the sales cycle time, improve the effectiveness of the sale and the size of the deal," he says. Once the goals are clear, dollar values can be assigned.

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YOU SHOULD PLAN ON spending between 2% and 3% of your IT budget to do metrics right, according to experts.

An example of how intangibles play into the mix is a company intranet Intel implemented in 1996. "Today, it seems like a no-brainer, but back then, it was leading-edge," Busch recalls. So the team that did the analysis to sell the intranet to senior management, a team he led, did the persuading with both tangible and intangible benefits. Among the former: a reduction in paper copies and the elimination of the paper company phone book and printing costs. "These weren't revolutionary, but they showed there was definitely a return," Busch recalls.

On the intangible side, there was "a whole level of benefits that were hard to quantify: sharing information in real time across the world vs. having to fax it or use FedEx; finding out information about our partners, customers and employees without having to make phone calls," Busch says. "This has revolutionized the way we do business."

But some things do translate into bottom-line benefits. Intel measures the WAN traffic and compute capacity for its design engineers, a major group of power users. "We know for any given compute and network capacity how many products our engineers can design," Busch says. The company also monitors the per-user cost-effectiveness of the workstations in that group. Intel switched the engineers' Unix workstations to Linux and has saved more than \$100 million in the past four years.

Overall, the view at Intel is that "there's a high degree of management judgment in how we make our IT investments," Busch says.

At SBS, the feeling is different. The company, formerly known as Entex IT Service Inc., was acquired by Siemens AG in April.

"We're looking at very tangible things," says CIO Gerhard Cerny. SBS doesn't do ROI analysis for every IT component; for example, fundamental functions such as the data center are treated as costs of doing business. But for every new project, there's an ROI statement that includes the projected savings or revenue gains.

Once the ROI has been accepted by the business unit manager, that manager's budget is tweaked based on the benefit the technology will bring. For example, if a new CRM system is implemented with a promise to raise the sales force's productivity by 20%, the sales quota will then go up by 20%. "It's a twist on the ROI discussion," Cerny says, "because it means the business managers are belling up to the bar. They accept a reduced budget or new business terms, and so they get involved in making sure that it does what we say it will do. It's a pretty good sanity check."

This system controls costs better and reduces projects' scope creep, Cerny says. Also, IT and business employees are motivated with bonuses and raises to keep on schedule and on budget. "All our livelihood, success and benefits depend on coming in on or ahead of this ROI projection. It's a painstaking prospect if you want to go over time and budget. Believe me, it's not something that most people want to engage in," he says.

"We're trying to build a culture," Cerny explains, "so that ROI is real and not just a number on paper."

ROI



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A



Cross-company alliances
are blossoming. Even
longtime adversaries are
seeding strategic deals
to cut costs and conquer
new markets

Partners PRO in FIT

ONE DAY IN THE MIDDLE OF LAST YEAR, General Motors Corp. Chairman John Smith Jr. was shooting the breeze with Edward C. Johnson III, chairman and CEO of FMR Corp., better known as Fidelity Investments. The companies' ties run deep; Boston-based Fidelity administers GM's employee savings program.

The executives got to talking wireless. Smith mentioned Virtual Advisor, a voice-enabled information-delivery system from GM subsidiary OnStar Corp. Johnson said Fidelity was looking at wireless to keep clients informed anytime, anywhere.

Nine months later, Fidelity and GM announced an alliance that lets GM's 800,000 OnStar subscribers monitor their invest-

ments (and will eventually let them buy and sell stocks) from behind the wheel. But how much the pact will contribute to either firm's bottom line remains to be seen.

Business alliances among not-so-obvious allies are skyrocketing. According to McLean, Va.-based Booz Allen & Hamilton Inc., the 1,000 largest U.S. companies earned less than 2% of their total revenue from alliances in 1980. By 1996, that percentage had hit 19%, and by next year, it's slated to reach 35%.

If you rely on the press releases that announce such partnerships, the reasons for them are many and convincing: cost reduction in the supply chain, access to new markets and the opportunity to bank in the glow of another respected company's reputation.

In the age of "co-opetition," even long-time foes are teaming up. FedEx Express, a subsidiary of Memphis-based FedEx Corp., recently partnered with the U.S. Postal Service. FedEx will fly about 3.5 million pounds of Postal Service packages each day and in return will be allowed to place FedEx drop boxes in post offices. FedEx says the seven-year deal will earn it more than \$7 billion—\$6.3 billion in transportation charges and \$900 million in increased drop-box revenue.

A FedEx spokesman says there will be little IT expense. All U.S. mail will be the Postal Service's responsibility; FedEx will share that responsibility only when the mail is actually crated up for flight. At that time, each crate will receive a FedEx tracking number, just as any package would.

"There's little systems overlap," the FedEx spokesman says. "They pick up the mail, they put it in containers, we haul it and they pick it up [when the plane lands]."

The alliance cuts cost by minimizing IT interaction—a theme echoed by partnerships such as the one between Blockbuster Inc. and RadioShack Corp., outlined below.

Still, the FedEx/Postal Service deal is an exception. Most partners find it tough to quantify exact returns on their joint activities.

An examination of some recent pairings reveals that cold, hard ROI numbers aren't easy to come by and that subjective feel-good benefits seem to take precedence over measurable bottom-line results. That's

not necessarily a reason to shun partnerships, but it may be cause to adjust your expectations if your organization does team up with another.

GM, Fidelity Investments

GM gets free content for its in-car information service; Fidelity wins access to more than 800,000 commuters who spend an average of 90 minutes per day in their cars.

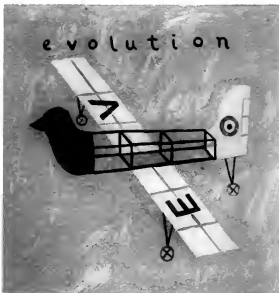
Under the GM/Fidelity agreement, subscribers to OnStar—GM's in-vehicle information-delivery system, which offers such services as stolen-vehicle tracking, emergency assistance and directions—can manage their Fidelity accounts through Virtual Advisor, OnStar's hands-free interface. Initially launched in the Northeast, the program is expected to be available nationwide this summer.

Tom Koulopoulos, president of The Delphi Group, a consultancy in Boston, and author of *The X-Economy* (Texere LLC, 2001), says the GM/Fidelity partnership is a natural.

"It's a next-generation distribution channel," he says. "OnStar essentially owns a community, and by reintermediating the value chain this way, Fidelity's going to be there where and when customers need it."

Koulopoulos' assessment of the partnership jibes with the stated goals of GM and Fidelity. "We're adding a new service to Virtual Advisor that we didn't have to build," says Mike Petersen, GM's director of the program. "We offered a distribution channel; they offered a service that's attractive to customers."

Joseph Ferri, a senior vice president at Fidelity, says the investment firm wanted to establish a leadership position in a place where lots of people spend lots of time: their cars. "When you peel all the technology away, it's about improved customer service," he says. "We're expanding the



ways customers can remain informed — anytime, in any mode."

Fidelity has two key metrics for the partnership: awareness and actual use of its wireless offerings. Ferra says the firm has goals for both metrics but declined to say what they are. In the meantime, Fidelity's financial services offerings are getting play on GM's Web site, and the company is first to market with hands-free, voice-activated mobile financial services.

Staples Inc., NowDocs Inc.

NowDocs gets revenue, a big partner and cash; Staples gets a new service without a major infrastructure build-out.

When Staples decided to expand its Web site, Staples.com, one major goal for the Framingham, Mass.-based office supply retailer was to increase its product offerings without taking its eye off its core business: its 1,100 brick-and-mortar retail stores. Establishing partnerships was the way to accomplish that goal, according to Staples.com Chief Technology Officer Mike Ragunas. "In our catalog, we've got 8,000 items," he says. "At Staples.com, we've integrated with wholesalers and manufacturers to offer 45,000."

Staples.com is seeking to limit its IT investment by acting as a portal to partners' Web sites, rather than linking to their order entry systems or creating a shared data center. This is especially notable at the company's business services center. Through this portal, Staples customers can do everything from insuring company cars to hiring debt-collection agencies.

Because Staples.com acts as a portal to partners' services, it has invested in an area some may find surprising: content and content management. To manage the ever-changing partner-related content on its own Web site, the company chose software from Sunnyvale, Calif.-based Interwen

line. Ragunas wouldn't say how much Staples.com has spent.

Staples.com's partners bear the burden of making sure their Web sites can handle the traffic Staples sends their way.

"We do not ask them to share our cost to create supporting content," Ragunas says. "The partners provide their own

Most partners find it tough to quantify exact returns on their joint activities. Hard numbers aren't easy to come by.

infrastructure. . . . They have got to do their own build-out." Staples.com and its partners don't share IT staff other than for network monitoring.

Here's where the monitoring comes in: When Staples.com executives were building the Web-based business services portal, one major worry was that poor service from any of the 35 partners, which tend to be young, small companies, could reflect badly on Staples.

"With all those third parties, we needed to make sure they met our standards," Ragunas says.

Staples.com's solution is wide-ranging. For starters, the company "mystery shops" its own partners and grades them on timely response, politeness and general customer service. Naturally, the partners know of this practice; they just don't know which calls are from Staples.

Staples.com also performs network monitoring and usability testing of its partners' Web sites, each of which receives a weekly report card and any applicable customer comments. "It's almost like free con-

sulting for these companies," Ragunas says. Staples.com wouldn't say how much it spends on controlling the quality of these partnerships, but J.B. Lyon, vice president of business services, says the payoff is indisputable.

In 1999, Staples.com's revenue was \$94 million. Last year, following the launch of the business services portal, revenue grew to \$512 million and repeat traffic increased by 287%. Lyon says the company's in-house studies show that the online services center was a major reason for the growth in repeat customers.

Finally, in an effort to reassure customers, Staples prominently posts a "stand-behind policy" on its home page that essentially says, in Ragunas' words: "If you've got a problem with one of our partners, come to us." This way, customers know they've got a \$10 billion company standing behind them."

When a partner's score falls below a certain level, Staples.com representatives visit the laggard and help coach its customer service team, Lyon says.

One of Staples' partners is 3-year-old NowDocs, an Aliso Viejo, Calif.-based online printing company. (They're partners in more ways than one; Staples has invested \$6 million in NowDocs.)

Bennett Hirsch, NowDocs' senior vice president of marketing and sales, says the company welcomed the alliance because it was eager to reach the small and medium-size business markets, which are Staples' bread and butter. "We'd decided not to invest money building a broad-based name [ourselves]," Hirsch says, "because if we did that, we'd be competing against the Staples of the world."

Ragunas declined to say how much Staples spends doing due diligence on its smaller partners but insists that whatever the amount, it's a vital way to safeguard the brand and its thus money well spent. Sta-

ples.com says it has dropped partners that failed to get with the program, though the company wouldn't name or quantify those partners.

Blockbuster,
RadioShack
Blockbuster gains windfall licensing revenue; RadioShack gets access to customers who don't sport pocket protectors.

Sometimes partnerships that appear to be IT-driven matches turn out to be very low tech. Such is the case of the alliance announced this spring between RadioShack and Blockbuster, a subsidiary of New York-based Viacom Inc. Under the deal, Fort Worth, Texas-based RadioShack will create its own stores-within stores in thousands of Blockbuster outlets.

RadioShack — whose retail presence is already massive, with 7,100 stores of its own — stands to realize true ubiquity once it sets up shop in Dallas-based Blockbuster's 5,000 stores.

RadioShack, known as a destination store for gadget-loving guys, stands to gain exposure to new demographics. The alliance "provides us access to more than 3 million Blockbuster customers each day," RadioShack CEO Leonard Roberts said in a statement, "including more women and young adults."

For its part, Blockbuster will earn a license fee for square footage that might otherwise be wasted, given the increasing popularity of DVDs, which require much less shelf space than videocassettes.

However, once RadioShack's mini-stores are in Blockbuster's outlets, the companies expect to have very little interaction. Although they say they plan in-store mar-



RadioShack and Blockbuster hope to share more than just retail space. Demographics are the brass ring.

keting campaigns and cross-promotions, each will use its own employees, point-of-sale systems and inventory tracking, according to a RadioShack spokeswoman.

Burlington Northern Santa Fe Corp., Union Pacific Corp., Norfolk Southern Corp.

They achieve reduced IT costs and increased customer satisfaction.

Last year, regulatory pressures forced Dallas-based Burlington Northern Santa Fe to scrap plans to merge with Montreal-based Canadian Railway Co. However, pre-merger exploration had already shown that the two railroad firms could save huge

amounts of money and eliminate duplicate efforts by pooling logistics data.

Bruce Freeman, Burlington Northern's CIO, decided that the death of the merger shouldn't kill a good idea. So he contacted rival railroads Union Pacific in Omaha and Norfolk Southern in Norfolk, Va., and proposed an alliance aimed at consolidating IT functions and improving customer satisfaction.

"Customers say we're hard to do business with if you're moving across different railroads," Freeman says. "It's like using two different airlines for one trip." The

result: confusion and high costs for all of the railroads. Meanwhile, each competitor has a large IT organization supporting billing, shipping and tracking.

The alliance's goal is to consolidate at the infrastructure level. The project is in its early stages. "We've got a request for proposals for an independent consultant to help us assess the business case and how to do the shared services," Freeman says. "The model would be 'crawl, walk, run.'" The first areas to tackle will be a shared data center and help desk. "If you could do that to prove the model, you could move into the joint application arena and shared procurement," he says.

Because it's early in the process, Freeman says, it's impossible to gauge the investment required. But the potential payoff is substantial: When he was looking into consolidation in anticipation of the Canadian Railway merger, Freeman found possible savings of 5% to 15% of the IT budget "just with basic infrastructure," he says. "The farther up the food chain you go, the higher the number goes."

BOB



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their own fixes on the cheap by PINN FOX*

YOU SPEND A BUNDLE ON SOFTWARE, IT/CRM integration, CRM, ERP and custom applications. The last thing on the agenda is support. And that's where it stays—at the bottom, a poor stepchild of IT strategy. Indeed, for most companies, tech support is inefficient and lacking direction and is therefore an expensive, unmanageable burden. The reason: Fixing crashed computers, changing printer settings and answering ambiguous how-to questions doesn't generate revenue. It sucks up time and money.

But new Web-based software tools designed to trim costs, speed up fixes and keep down tech-support head count are beginning to show promise. For example, Eaton, a Cleveland-based industrial manufacturer, uses software from Sunnyvale, Calif.-based Kimtana to speed code changes. Eaton eliminated two full-time IT positions (at \$170,000 per year), reduced deployment times by 80% and cut the time needed to do routine software configuration changes from seven days to one. Many emergency fixes are now completed in less than four hours, down from 24 hours, according to Eaton.

Another user of automated support software, ExactSoft Home, a Redwood City, Calif.-based provider of Chiroband Internet access, initially determined tech support needs based on the kinds of problems customers reported. "We looked at trouble tickets and saw configuration was the overriding issue.... We decided anything we could do to keep people connected without a lengthy telephone call—would save time and money," explains senior support director Gerald Anderson. ExactSoft@Home went with a product from Support.com, also based in Redwood City. The result: "Thousands of customers literally helping themselves; they use the telephone as a last resort," says Anderson.

Eric Rocco, vice president of Openview Research at Gartner in Lowell, Mass., says a typical tech-support call costs approximately \$30 to \$35 per hour, compared with about half that for an automated fix.

Obviously, forestalling a live call can save money.

Support.com's offering includes what's called a self-healing mechanism, which can remember the configuration of individual desktops and then automatically restore them in the event of a crash. The software can identify differences from a unique Web address—located behind a firewall—or via a company's portal. This drives self-service and centralizes support functions.

As vendors develop increasingly complicated software, the need for consistent central tech support increases. "This is a deep-rooted, systemic problem in the IT industry. As upgrades proliferate, technical support must remedy the complexity; you have to automate the solution," says Iwan Adams, an analyst at Dataquest, also in Lowell.

Consider the case of the telecommunications company that's had to apply 6,000 patches since adopting Oracle's 11i database software.

Kimtana's technology chain management software was designed to let ordinary business users as opposed to tech support professionals—deploy such changes and fixes. It also defines IT processes to make it easier to roll out more complicated patches, provide upgrades and introduce new applications. In one Oracle implementation, Kimtana says it slashed the number of manual operations from 86 to eight.

"These kinds of automated software solutions allow you to remotely fix and manage that which you would normally have to send a person to do," says Richard L. Pike, an analyst at Horwitz Group in Framingham, Mass.

"Look at the cost of a person's time. It's a huge expense for your business," says Pike. "Automated support frees IT resources to focus on more strategic projects. IT also gains by providing competitive business advantages. It's not just maintenance," he adds.

Put the Help Desk on Hold

*Automated software lets users do
their own fixes on the cheap* BY PIMM FOX

YOU SPENT A BUNDLE ON SOFTWARE, LEGACY integration, CRM, ERP and custom applications. The last thing on the agenda is support.

And that's where it stays — at the bottom, a poor stepchild of IT strategy. Indeed, for most companies, tech support is inefficient and lacking direction and is therefore an expensive, unmanageable burden. The reasons: Fixing crashed computers, changing printer settings and answering ambiguous how-to questions doesn't generate revenue. It sucks up time and money.

But new Web-based software tools designed to trim costs, speed up fixes and keep down tech-support head count are beginning to show promise. For example, Eaton, a Cleveland-based industrial manufacturer, uses software from Sunnyvale, Calif.-based Kintana to speed code changes. Eaton eliminated two full-time IT positions (at \$120,000 per year), reduced deployment time by 80% and cut the time needed to do routine software configuration changes from seven days to one. Many emergency fixes are now completed in less than four hours, down from 24 hours, according to Eaton.

Another user of automated support software, ExcelsiorHome, a Redwood City, Calif.-based provider of broadband Internet access, initially determined tech support needs based on the kinds of problems customers reported. "We looked at trouble tickets and saw configuration was the most common issue. . . . We decided anything we could do to help people connected —

Obviously, forestalling a live call can save money.


Support.com's offering includes what's called a self-healing mechanism, which can remember the configuration of individual desktops and then automatically restore them in the event of a crash. The software can identify differences from a unique Web address — located behind a firewall — or via a company's portal. This drives self-service and centralizes support functions.

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"These kinds of automated software solutions



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Balance Your Outsourcing

Squeeze value from 'by-the-drink' providers by knowing the right mix **BY GUS TAI**

OUTSOURCING WEB-BASED SERVICES IS CLEARLY a trend among Fortune 500 companies. For busy CIOs, the possibility of buying software and services "by the drink" is enticing. These services not only deliver more flexibility and lower cost, but they also promise economies of scale and improved service from focused experts. Savings vary but could run into millions of dollars per year. Which Web services should you outsource? And will the benefits deliver value to your company and customers?

These providers offer many capabilities, from Web hosting and file storage to sophisticated data mining and customer relationship management services. The more complex services require deeper customer commitment but can provide greater returns.

First, you'll need to determine which capabilities are key to your business. Those that aren't strategic are prime candidates for outsourcing. Examples might include e-mail, storage and security services. But if the technology is essential to a core competency, keep it in-house. By using Oracle's hosted sales force application, for example, you risk having your rivals match your sales management capabilities if they choose the same service.

Once you've determined what's strategic to your company, consider the following issues:

CAN YOU CUSTOMIZE IT? In-house systems can be easily customized for your needs. The same isn't always

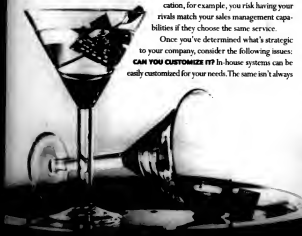
true of outsourced services. Moreover, capital improvements you make to your own assets will later help improve earnings before interest, taxes, depreciation and amortization and may increase gross margins. Strategically, keeping the capability in-house preserves the option to develop the outsourced service into a core competency. But fiscally, internal development is usually a shared resource, so it's hard to know the actual costs that support a given revenue stream.

An outsourced service offers greater operational visibility, which should help management prioritize where to attack revenue and costs. And strategically, the service should be one that you've decided to rely on someone else's competence to provide. Therefore, preserving this capability shouldn't be important.

CAN YOU CONTROL IT? Web-based service providers often trumpet their products' security and redundancy features. But before outsourcing, take a hard look at the consequences of both minor and catastrophic service failures, because when an externally managed system fails, you're at the mercy of the service provider.

CAN YOU AFFORD IT? Although good outsourcers should help grow profits, your costs could go up if the service isn't managed properly. You could end up paying for the outsourcer, the employees to manage the outsourcer and the in-house staff replaced by the outsourcer who haven't been redeployed yet. In a flat-growth economy, you might have to lay off employees or eat added personnel costs while waiting for growth.

To avoid these pitfalls, negotiate tiered service-level agreements that specify the performance quality isn't acceptable. Experience with these services is limited, so the CIO will need to be closely involved from the start. Also, it could be wise to hire a consultant to help with the agreement structure. If you need customization, put the code in escrow and lay out terms for termination of the deal. Finally, be prepared for the potential increase in total costs and plan beforehand how you'll redeploy the affected staff. ■



PHOTOGRAPHY

Making the Inevitable Pay Off

Some artists are building a business model

around unauthorized file-trading BY ANN HARRISON

WHILE THE MUSIC INDUSTRY IS BUILDING 13-GAL dams against Napster to quell the rising tide of online file-trading, other online entrepreneurs are riding the wave with business strategies that coexist with the free flow of intellectual property.

On one side are executives at the Big Five record companies, who complain that Napster's efforts to filter copyrighted music haven't stopped the unauthorized trading of music files. They were recently joined in their efforts to squash the company by 27,000 music publishers, who may consolidate their case in a class action suit. A collection of independent musicians and record labels are also pushing for their own class-action suits against Redwood City, Calif.-based Napster.

On the other side is another group of artists, including Courteen Love and rapper Chuck D, who contend that the recording industry's efforts to muzzle Napster have less to do with defending artists and more to do with the industry's distribution monopoly. Despite claims that file-trading undermines revenue, the artists note that the recording industry made record profits last year—in coincidence with 71 million Napster users. And musicians are still required to sign away the rights to their material in exchange for royalties of less than 10%.

Chuck D, who ticked off his record company greatly a few years ago by posting his music on the Web in MP3 files, has created a business model that uses free file-trading as a strategy. He has adapted to the MP3 economy by selling his own bootlegged records and diversifying into scoring music for movies. "MP3 file-sharing is the new radio, the new jukebox, the new way of checking things out," says Chuck D, who founded rap group Public Enemy. "Trying to stop file-sharing is like trying to stop the rain. People are going to

download music, and you have to capitalize on that."

Disgruntled musicians also note that even if Napster is demolished in court, free file-trading systems that are less vulnerable to litigation will take its place. FreeNet and Gnutella file-sharing software improve on Napster because they operate without a central server to record the files that are exchanged. FreeNet also encrypts files but is limited because of the computational power needed to encrypt the data.

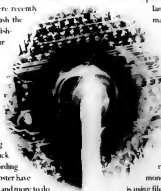
Ian Clark, FreeNet's 24-year-old author, may soon have the resources to develop a more refined version of the system. Intel and a collection of other funders are investing \$4 million in Clark's company, Uprizer, which will create proprietary software based on FreeNet's technology.

Instead of viewing file-sharing as piracy, Chuck D says he sees it as a way to replace the wasteful of radio networks and music video channels that exclude independent artists and cater to the Big Five record companies. The key to making money in the era of free downloads, he says, is using file-sharing to reach fans who attend live concerts and lowering the cost of recording. Large record companies spend an average of \$3 million to make a hit record and typically take two years to release it. But this equation changed when it became possible to build professional digital recording studios for less than \$5,000.

Chuck D says he can record a track in one night and post it online within days. He now owns four digital studios and distributes music from 100 artists via his Rapstation.com site, which charges a subscription fee. Instead of signing individual artists, he buys the rights to songs for \$100 and splits the download proceeds with artists 50/50.

Other industries that have capitalized on the concept of free file-sharing include the open-source community, which creates free software and later charges a fee to support or customize it.

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preview

Coming in the September/October Issue

Ahead of the Pack: The Wireless 25

Computerworld ROI lists the top 25 innovators using wireless technologies. Look for profiles of honorees from business, education and government, plus details of the business payback they're getting from wireless technologies and services.

A Delicate Balance

Companies nominated to the Wireless 25 transmit and receive ultrasensitive data — from financial and health information to competitive market intelligence. We look at how they weigh security risks against potentially great gains on the corporate balance sheet.

On the Move

Does untethering the workforce boost the bottom line? What are the benefits of giving workers wireless access to corporate computers? Top innovators talk about how they measure return on mobility.

balance sheet

Shell Strikes Knowledge Gold

ROYAL DUTCH/SHELL GROUP's geologists, engineers, drillers and other workers used to rely mostly on their Shell colleagues and support from central offices to get information. "What we had was a community of expatriates who might link up when they encountered a problem. We had knowledge management, but not that much," says Shell's Arjan van Unnik.

That was before Netherlands-based Shell's 1999 investment of \$1.5 million in a knowledge management system using off-the-shelf collaborative software (see figures below). Shell began developing what has evolved into 13 Web-based "communities of practice," which are now tapped regularly by more than 10,000 Shell employees worldwide to share technical data and pose queries.

Giving workers an easy way to share their wealth of knowledge has paid off. In its first full year, Shell's system rang up business benefits totaling \$200 million, in both decreased costs and new revenue.

For more details about Shell's risks and rewards, visit www.computerworld.com/roi and click on Balance Sheet Notes.

—Julie King

The Costs

\$100,000	Hardware, software and operations costs
\$1.4 million	Marketing and management

The Benefits

1,000	Number of users
\$25 million	New revenue and decreased costs



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